



## Claudiu V. Schirda, Ph.D.

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**Title(s):** MR Physicist/Assistant Professor of Radiology

### Education

**Ph.D. in Physics** Univ. of Pittsburgh, PA. 2007 (thesis: “*Rosette Spectroscopic Imaging*”, Date of Defense: Feb 22, 2007)  
**M.S. in Physics** Univ. of Pittsburgh, PA. 1998  
**B.S. in Physics** Univ. of Bucharest, Romania. 1997 (Major in Theoretical Physics)  
 Free Univ. of Amsterdam, Nederland. 1995-1996 (work on B.S. thesis)  
 Military Flight Academy, Romania. 1991-1992

### Appointments and Positions

2009 - MR Physicist, MR Research Center, UPMC, Pittsburgh, PA  
 2009 - Assistant Professor, Dept of Radiology, Univ of Pittsburgh, Pittsburgh, PA  
 2008 - 2009 Director, MRI Sequence Development Unit, Buffalo Neuroimaging Analysis Center, Jacobs Neurological Institute, Buffalo, NY  
 2007 - 2009 MR Physicist, Buffalo Neuroimaging Analysis Center, JNI, Buffalo, NY  
 2007 - 2009 Assistant Professor, Dept. of Neurology, SUNY Buffalo, Buffalo, NY  
 2007 - 2007 MR Consultant for MR Research Center, UPMC, Pittsburgh, PA  
 2001 - 2007 Research Assistant, University of Pittsburgh, Radiology Department, Magnetic Resonance Research Center, Dr. F.E. Boada group  
 2000 - 2001 Teaching Fellow, University of Pittsburgh, Department of Physics  
 1998 - 2000 Research Assistant, University of Pittsburgh / Fermi National Accelerator Laboratory (Fermilab), Dr. P. Shepard and Dr. J. Boudreau research group  
 1997 - 1998 Teaching Assistant, University of Pittsburgh, Department of Physics

### Teaching Experience

2008 - 2009 Presentations of non-conventional MRI in monthly CME seminars  
 2001 - 2003 Physics, Math and Statistics Tutor for Academic Support Services for Student-Athletes (ASSSA), University of Pittsburgh  
 2000 - 2001 Teaching Fellow for Calculus Based Physics  
 1998 - 1998 Teaching Assistant for Non-Calculus Based Physics  
 1997 - 1998 Teaching Assistant for Advanced Measurements in Physics (Lab)

## Work Experience

### Magnetic Resonance Research Center, Pittsburgh, PA (Dec '09 - present)

#### Development/Protocol management/Service

- Involved with all aspects of data acquisition and processing, protocol setup and training of the MR technologists, for the majority of the scanning protocols at MR Research Center, UPMC, especially non-standard ones. Set up numerous protocols on the 3T and 7T scanners available at MRRC. In addition to more standard fMRI protocols, among others, developed, tested and implemented some non-standard protocols to be used in studies, which were or are on track to be funded by NIH, such as:
  - $^{31}\text{P}$  functional spectroscopic imaging
  - Arterial Spin Labeling (ASL)
  - Protocol for assessing/comparing white matter damage induced by different devices used to cannulate the brain during neurosurgery (using cadaver brains)
  - Glutamate MRS measurements/studies at 3T and 7T
  - GABA MRS measurements/studies at 3T and 7T
  - High-res multi-echo SWI (at 3T and 7T), for increased SNR and concomitant phase and  $T2^*$  imaging
  - $T2$  imaging at 3T combined with  $T2^*$  given by multi-echo SWI for high-res  $T2'$  imaging, for more accurate iron quantification
  - Fast, high-res brain spectroscopic imaging using 3D RSI with spherical/ellipsoidal encoding
  - Fast, breath-hold liver spectroscopic imaging using 3D RSI with spherical/ellipsoidal encoding
  - Protocol for co-registration of in-vivo brain MR and PET data and post-mortem MR
  - $^{19}\text{F}$  and  $^1\text{H}$  *in-vivo* cardiac pig studies
  - $^{19}\text{F}$  stem cell MRS/MRI tracking in cancer patients
- Involved in coordinating the updates of the scanning protocols following a major Siemens software upgrade (especially protocols with work-in-progress WIP or custom sequences).
- Member of the review committee awarding MRRC pilot grants

#### Data Analysis

- Wrote Matlab programs to process raw (twix) Siemens data for the non-standard fast spectroscopic imaging RSI acquisition I developed, for 2D and 3D (cylindrical and ellipsoidal) encoding. Wrote scripts to pass reconstructed RSI data to LCModel, for automated quantification and to read the LCModel results for all voxels.
- Wrote Matlab programs to process raw (twix) Siemens SWI data
- Implemented the data analysis for the DCE (Dynamic Contrast Enhanced) protocol
- Helped MRRC users process ASL and DTI data collected.
- Wrote programs to clean up and filter ECG data collected during the MR imaging sessions for some studies and affected by scanner gradient noise
- Wrote Matlab program to clean up spike noise in pseudo-Kspace, for magnitude DTI images.

**Multi-center studies**

- Determined optimal parameters/settings and set up protocols on the scanners at MRRC to produce the closest possible match to the output from scanners at other institutions using different MRI machines produced by Siemens, Philips or GE, as part of multi-center studies.
- Visited and implemented protocols or worked with physicists at collaborating research centers around the country to set up protocols on scanners produced by different manufacturers and/or with different software versions.
- Worked with RAs to help process and monitor the output of the QC (quality control) scans at different sites and provided solutions when deviations were found

**Training/Educational**

- Training of MRI technologists
- Creation of acquisition manuals for new protocols/sequences implemented, to be used by MRI technologists.
- Teaching and helping different users or user groups with processing data and understanding the underlying physics in acquiring that data

**Buffalo Neuroimaging Analysis Center, Buffalo, NY (June '07- Nov '09)****Development/Protocol management**

- Responsible for managing/updating more than 100 scanning protocols for a range of neurological disorders (with focus on multiple sclerosis) on the 1.5T and 3T GE HD 12.x scanners available at Buffalo General Hospital, Buffalo, NY
- Responsible for developing/implementing/optimizing new scanning techniques like:
- Single/multi-voxel spectroscopy acquisition techniques for determining brain metabolite ratios and measuring neural stem and progenitor cell (NPCs) levels in hippocampus
- Magnetization Transfer Imaging (MTI) techniques for brain, spinal cord and optic nerve and quantitative MTI (qMTI) for brain, used for determining nerve demyelination.
- Sag T1W IR (inversion recovery) significantly improved the ability of the neurologists at JNI (Jacobs Neurological Institute, Buffalo, NY) to detect lesions in the spinal cord of multiple sclerosis patients
- IR-FSPGR greatly increased brain gray/white matter image contrast over SPGR, allowing for improved quantification of gray/white matter volume necessary to measure atrophy
- SWI (susceptibility weighted imaging) for detection of brain iron content and vessels
- Phase Contrast Cine MRI for quantifying CSF Flow in the cerebral Aqueduct

**Data Analysis**

- Wrote Matlab program for reconstructing multi-voxel spectroscopy data and interfaced it with LCMoDel for accurate brain metabolite quantification and calculation of metabolite ratios in pure white matter

- Wrote SWI data reconstruction program in Matlab; optimized the reconstruction settings for detection of small veins and iron deposition areas in brain; reconstructed images converted to NIFTI for easy manipulation with JIM software.
- Developed an objective quantification technique of the CSF flow rates in the cerebral aqueduct, using semi-automated outlining of the aqueduct

### **Multi-center clinical trials**

- Responsible for helping centers around the world involved in clinical trials coordinated by Buffalo Neuroimaging Analysis Center, set up protocols on a wide range of scanners (different manufacturers: GE, Siemens, Philips, Varian, etc and different software versions)

### **Training/Educational**

- Training of MRI technologists
- Creation of acquisition manuals for new protocols/sequences implemented, to be used by MRI technologists.
- Creation of SOPs (Standard Operating Procedures) to be used by RAs (Research Assistants) for processing/analysis/manipulation of data collected with new sequences
- Monthly presentations of non-conventional scanning techniques for neurologists/fellows in a CME seminar

### **Magnetic Resonance Research Center, Pittsburgh, PA (May '01-June'07)**

#### Proton $^1\text{H}$ and Phosphorous $^{31}\text{P}$ Magnetic Resonance Spectroscopic Imaging

- Developed two new data acquisition techniques for fast spectroscopic imaging, using non-Cartesian trajectories. Speed up by one to two orders of magnitude in data acquisition while maintaining greater sensitivity compared to standard sequence.
- Theoretical estimates of the techniques' performance; wrote C/C++ and Monte Carlo simulation programs in Matlab to determine optimal parameters of the imaging sequence and demonstrate theoretical predictions.
- Wrote pulse sequence in EPIC (Environment for Pulse Programming in C) and implemented it on the GE Signa 3T and 1.5T whole body systems available at Magnetic Resonance Research Center, UPMC.
- Designed the acquisition gradient waveforms and implemented on the GE Signa scanner.
- Demonstrated experimentally the techniques on the whole body GE Signa 3T and 1.5T (Phosphorous  $^{31}\text{P}$  and proton  $^1\text{H}$  spectroscopic imaging studies).
- Implemented a main field  $B_0$  inhomogeneity correction, based on a self-derived field map.
- Theoretical and numerical simulations studies to determine optimal weights to be used for regridding in data reconstruction.

## Data management

- Developed tools for raw data reconstruction and image processing in C/C++ and Matlab.

Experienced with the full cycle of sequence development on Siemens IDEA system.

- Modifying code, compiling, installing, etc on VB13, VB15, VB17, VB19, VB18P, VB20P, VE11B, VE11C
- Knowledge of Siemens systems and Siemens standard sequences.

Experienced with the full cycle of sequence development on GE Signa system.

- Writing EPIC code (8.2.5, 8.4, VH2, VH3 and VH3m4). Compiling, running the WTools simulator, debugging at run time.
- Experience with studies on human volunteers, using the GE Signa 3T: brain, cervical and musculoskeletal imaging.
- Knowledge of GE Signa system and GE standard sequences.

## Programming Experience and Skills

### More than 10 years UNIX experience

- Good knowledge of Linux (installation, setup, troubleshooting, maintenance).
- Familiarity with IRIX and Solaris.
- C, C++, Matlab development under Linux, IRIX

### More than 10 years Windows experience

- Windows 98SE/ 2000/ XP/Vista/Windows 7/8/10
- Troubleshooting, maintenance, system resources management
- Experienced with development tools: gcc 3.3 under Cygwin (UNIX environment for Windows)

### High Level Programming environments

- Very good knowledge of Matlab, experience with Mathematica

### Office Applications

- Microsoft Office XP/2003/2007/2010/2011(MacOS)/2013/2016/2019 experience (Word and PowerPoint)

## Publications

1. **Schirda, C.**, Tanase, C. and Boada F, *Rosette Spectroscopic Imaging: Optimal Parameters for Artifact-free, High Sensitivity Spectroscopic Imaging* (Journal of Magnetic Resonance Imaging, 2009 Jun;29(6):1375-85., [PMID 19472411](#))
2. Di Perri C., Dwyer MG, Wack D, Cox J.L., Hashmi K., Saluste E., Hussein S., **Schirda C.**, Stosic M., Durfee J., Poloni G.U., Nayyar N, Bastianello S. and Zivadinov R, *Signal abnormalities on 1.5 and 3 Tesla Brain MRI in multiple sclerosis patients and healthy controls. A morphological and spatial quantitative comparison study* (NeuroImage, 2009 Oct. 1:47(4): 1352-62, [PMID 19371784](#))
3. Zamboni P, Menegatti E, Weinstock-Guttman B, **Schirda C**, Cox JL, Malagoni AM, Hojnacki D, Kennedy C, Carl E, Dwyer MG, Bergsland N, Galeotti R, Hussein S, Bartolomei I, Salvi F, and Zivadinov R: *The severity of chronic cerebrospinal venous insufficiency in patients with multiple sclerosis is related to altered cerebrospinal fluid dynamics*. Funct Neurol. 2009 Jul-Sep ;24(3):133-8. [PMID 20018140](#)
4. Hojnacki D, Zamboni P, Lopez-Soriano A, Galleotti R, Menegatti E, Weinstock-Guttman B, **Schirda C**, Magnano C, Malagoni AM, Kennedy C, Bartolomei I, Salvi F, and Zivadinov R: *Use of neck magnetic resonance venography, Doppler sonography and selective venography for diagnosis of chronic cerebrospinal venous insufficiency: a pilot study in multiple sclerosis patients and healthy controls*. Int Angiol. 2010 Apr;29(2):127-39. [PMID 20351669](#).
5. Zamboni P, Menegatti E, Weinstock-Guttman B, **Schirda C**, Cox JL, Malagoni AM, Hojnacki D, Kennedy C, Carl E, Dwyer MG, Bergsland N, Galeotti R, Hussein S, Bartolomei I, Salvi F, Ramanathan M, and Zivadinov R: *CSF dynamics and brain volume in multiple sclerosis are associated with extracranial venous flow anomalies: a pilot study*. Int Angiol. 2010 Apr;29(2):140-8. [PMID 20351670](#).
6. Zivadinov R, **Schirda C**, Dwyer MG, Haacke ME, Weinstock-Guttman B, Menegatti E, Heininen-Brown M, Magnano C, Malagoni AM, Wack DS, Hojnacki D, Kennedy C, Carl E, Bergsland N, Hussein S, Poloni G, Bartolomei I, Salvi F, and Zamboni P: *Chronic cerebrospinal venous insufficiency and iron deposition on susceptibility-weighted imaging in patients with multiple sclerosis: a pilot case-control study*. Int Angiol. 2010 Apr;29(2):158-75. [PMID 20351672](#).
7. Zivadinov R, Lopez-Soriano A, Weinstock-Guttman B, **Schirda CV**, Magnano CR, Dolic K, Kennedy CL, Brooks CL, Reuther JA, Hunt K, Andrews M, Dwyer MG and Hojnacki DW. *Use of MR venography for characterization of the extracranial venous system in patients with multiple sclerosis and healthy control subjects*. Radiology. 2011 Feb;258(2):562-70. [PMID 21177394](#).
8. Zamboni P, Menegatti E, Weinstock-Guttman B, Dwyer MG, **Schirda CV**, Malagoni AM, Hojnacki D, Kennedy C, Carl E, Bergsland N, Magnano C, Bartolomei I, Salvi F, Zivadinov R. *Hypoperfusion of brain parenchyma is associated with the severity of chronic cerebrospinal*

*venous insufficiency in patients with multiple sclerosis: a cross-sectional preliminary report.* BMC Med. 2011 Mar 7;9:22. [PMID 21385345](#).

9. Zivadinov R, Galleotti R, Hojnacki D, Menegatti E, Dwyer MG, **Schirda C**, Malagoni AM, Marr K, Kennedy C, Bartolomei I, Magnano C, Salvi F, Weinstock-Guttman B, Zamboni P. *Value of MR venography for detection of internal jugular vein anomalies in multiple sclerosis: a pilot longitudinal study.* AJNR Am J Neuroradiol 2011 May;32(5):938-46. [PMID 21474626](#).

10. Zivadinov R, Poloni GU, Marr K, **Schirda CV**, Magnano CR, Carl E, Bergsland N, Hojnacki D, Kennedy C, Beggs CB, Dwyer MG, Weinstock-Guttman B. *Decreased brain venous vasculature visibility on susceptibility-weighted imaging venography in patients with multiple sclerosis is related to chronic cerebrospinal venous insufficiency.* BMC Neurol. 2011 Oct 19;11:128 [PMID 22011402](#).

11. Zivadinov R, Brown MH, **Schirda CV**, Poloni GU, Bergsland N, Magnano CR, Durfee J, Kennedy C, Carl E, Hagemeyer J, Benedict RH, Weinstock-Guttman B, Dwyer MG. *Abnormal subcortical deep-gray matter susceptibility-weighted imaging filtered phase measurements in patients with multiple sclerosis A case-control study.* Neuroimage. 2012 Jan 2;59(1):331-9. [PMID 21820063](#).

12. Magnano C, **Schirda C**, Weinstock-Guttman B, Wack DS, Lindzen E, Hojnacki D, Bergsland N, Kennedy C, Belov P, Dwyer MG, Poloni GU, Beggs CB, Zivadinov R. *Cine cerebrospinal fluid imaging in multiple sclerosis.* Journal of Magnetic Resonance Imaging, 2012 [PMID 22733409](#)

13. Wack DS, Cox J, **Schirda CV**, Magnano CR, Sussman JE, Henderson D, Burkard RF. *Functional Anatomy of the Masking Level Difference, an fMRI study.* PlosOne 2012; 7(7):e41263, Epub 2012 Jul 27, [PMID 22848453](#).

14. Hagemeyer J, Weinstock-Guttman B, Heininen-Brown M, Poloni GU, Bergsland N, **Schirda C**, Magnano CR, Kennedy C, Carl E, Dwyer MG, Minagar A, Zivadinov R. *Gray matter SWI-filtered phase and atrophy are linked to disability in MS.* Front Biosci (Elite Ed). 2013 Jan 1;5:525-32. [PMID 23277008](#).

15. Zheng H, Zhao T, Qian Y, **Schirda C**, Ibrahim TS, Boada FE, *Multi-Slice Parallel Transmission Three-Dimensional Tailored RF (PTX 3DTRF) Pulse Design for Signal Recovery in Ultra High Field Functional MRI.* Journal of Magnetic Resonance, March 2013 [PMID 23348046](#).

16. Di Perri C., Dwyer MG, Bergsland N, **Schirda C.**, Poloni G.U., Wack D, Cox J.L., Dalaker TO, Ranza L., Saluste E., Hussein S., Bastianello S., Zivadinov R. *White Matter Hyperintensities on 1.5 and 3 Tesla Brain MRI in Healthy Individuals.* Journal of Biomedical Graphics and Computing, 2013 April 22, Vol 3 No3, [URL](#)

17. Zivadinov R, Magnano C, Galeotti R, **Schirda C**, Menegatti E, Weinstock-Guttman B, Marr K, Bartolomei I, Hagemeyer J, Malagoni A, Hojnacki D, Kennedy C, Carl E, Beggs C, Salvi F,

Zamboni P. *Changes of cine cerebrospinal fluid dynamics in multiple sclerosis patients treated with percutaneous transluminal angioplasty: a case-control study.* J Vasc Interv Radiol. 2013 Jun;24(6):829-38 [PMID 23523158](#).

18. Perlman SB, Hein TC, Stepp SD, Almeida JR, Arnold L, Axelson D, Bebko G, Bertocci M, Birmaher B, Bonar L, Demeter C, Diwadkar VA, Fournier JC, Findling RL, Fristad MA, Gill MK, Hinze AK, KHolland S, Horwitz SM, Kowatch RA, Perlman SB, Phillips ML, **Schirda C**, Sun-shine JL, Travis M, Versace A, Youngstrom EA. *Emotional reactivity and its impact on neural circuitry for attention-emotion interaction in childhood and adolescence.* Dev Cogn Neurosci. 2014 Apr;8:100-9. [PMID 24055416](#).

19. Bebko G, Bertocci MA, Perlman SB, Fournier JC, Hinze AK, Bonar L, Almeida JR, Perlman SB, Versace A, **Schirda C**, Travis M, Gill MK, Demeter C, Diwadkar VA, Ciuffetelli G, Rodriguez E, Olinio T, Forbes E, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson D, Horwitz SM, Arnold LE, Fristad MA, Youngstrom, EA Findling RL and Phillips ML, *Parsing dimensional versus diagnostic category-related patterns of reward circuitry function in mood dysregulated youth in the Longitudinal Assessment of Manic Symptoms (LAMS) study.*JAMA Psychiatry. 2013 Nov 27 [PMID 24285346](#).

20. Perlman SB, Fournier JC, Bebko G, Bertocci MA, Hinze AK, Bonar L, Almeida JR, Versace A, **Schirda C**, Travis M, Gill MK, Demeter C, Diwadkar VA, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson D, Horwitz SM, Arnold LE, Fristad MA, Youngstrom, EA Findling RL and Phillips ML, *Emotional face processing in pediatric bipolar disorder: Evidence for functional impairments in the fusiform gyrus.* J Am Acad Child Adolesc Psychiatry. 2013 Dec;52(12):1314-1325 [PMID 24290464](#).

21. Bertocci MA, Bebko G, Olinio T, Fournier J, Hinze AK, Bonar L, Almeida JR, Perlman SB, Versace A, Travis M, Gill MK, Demeter C, Diwadkar VA, White R, **Schirda C**, Sunshine JL, Arnold LE, Holland SK, Kowatch RA, Birmaher B, Axelson D, Youngstrom EA, Findling RL, Horwitz SM, Fristad MA, Phillips ML. *Behavioral and emotional dysregulation trajectories marked by prefrontal-amygdala function in symptomatic youth.* Psychol Med. 2014 Jan 27:1-13. [PMID 24468022](#)

22. Deng W, Boada F, Poser BA, **Schirda C**, Stenger VA. *Iterative projection onto convex sets for quantitative susceptibility mapping.* Magn Reson Med. 2014 Mar 6 [PMID 24604410](#).

23. Stan AD, **Schirda CV**, Bertocci MA, Bebko GM, Kronhaus DM, Aslam HA, LaBarbara EJ, Tanase C, Lockovich JC, Pollock MH, Stiffler RS, Phillips ML. *Glutamate and GABA contributions to medial prefrontal cortical activity to emotion: implications for mood disorders.* Psychiatry Res. 2014 Sep 30 [PMID 24973815](#).

24. Ahrens ET, Helfer BM, O'Hanlon CF, **Schirda C.**, *Clinical cell therapy imaging using a perfluorocarbon tracer and fluorine-19 MRI.* Magn Reson Med. 2014 Sep 19 [PMID 25241945](#).

25. Bebko G, Bertocci M, Chase H, Dwojak A, Bonar L, Almeida J, Perlman SB, Versace A, **Schirda C**, Travis M, Gill MK, Demeter C, Diwadkar V, Sunshine J, Holland S, Kowatch R,



Birmaher B, Axelson D, Horwitz S, Frazier T, Arnold LE, Fristad M, Youngstrom E, Findling R, Phillips ML. *Decreased amygdala-insula resting state connectivity in behaviorally and emotionally dysregulated youth*. Psychiatry Res. 2014 Nov 14. [PMID 25433424](#).

26. Prasad KM, Upton CH, **Schirda C**, Nimgaonkar VL, Keshavan MS. *White matter diffusivity and microarchitecture among schizophrenia subjects and first-degree relatives*. Schizophr Res. 2014 Oct 30. [PMID 25454798](#).

27. Versace A, Acuff H, Bertocci MA, Bebko G, Almeida JR, Perlman SB, Leemans A, **Schirda C**, Aslam H, Dwojak A, Bonar L, Travis M, Gill MK, Demeter C, Diwadkar VA, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson D, Horwitz SM, Frazier TW, Arnold LE, Fristad M, Youngstrom E, Findling R, Phillips ML. *White matter structure in youth with behavioral and emotional dysregulation disorders: a probabilistic tractographic study*. JAMA Psychiatry. 2015 Apr;72(4):367-76. [PMID 25715064](#).

28. **Schirda CV.**, Zhao T., Andronesi OC, Lee Y., Pan, JW, Mountz JM, Hetherington HP and Boada, F, *In vivo brain rosette spectroscopic imaging (RSI) with LASER excitation, constant gradient strength readout, and automated LCMoel quantification for all voxels*. Magnetic Resonance in Medicine, 2016 Aug;76(2):380-90, [PMID 26308482](#).

29. Portugal LC, Rosa MJ, Rao A, Bebko G, Bertocci MA, Hinze AK, Bonar L, Almeida JR, Perlman SB, Versace A, **Schirda C**, Travis M, Gill MK, Demeter C, Diwadkar VA, Ciuffetelli G, Rodriguez E, Forbes EE, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson D, Horwitz SM, Arnold EL, Fristad MA, Youngstrom EA, Findling RL, Pereira M, Oliveira L, Phillips ML, Mourao-Miranda J. *Can Emotional and Behavioral Dysregulation in Youth Be Decoded from Functional Neuroimaging?* PLoS One. 2016 Jan 5;11(1). [PMID 26731403](#).

30. Pohl KM, Sullivan EV, Rohlfing T, Chu W, Kwon D, Nichols BN, Zhang Y, Brown SA, Tapert SF, Cummins K, Thompson WK, Brumback T, Colrain IM, Baker FC, Prouty D, De Bellis MD, Voyvodic JT, Clark DB, **Schirda C**, Nagel BJ, Pfefferbaum A. *Harmonizing DTI measurements across scanners to examine the development of white matter microstructure in 803 adolescents of the NCANDA study*. Neuroimage, 2016, Feb 9. [PMID 26872408](#).

31. Bertocci MA, Bebko G, Versace A, Fournier JC, Iyengar S, Olino T, Bonar L, Almeida JR, Perlman SB, **Schirda C**, Travis MJ, Gill MK, Diwadkar VA, Forbes EE, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson D, Horwitz SM, Frazier TW, Arnold LE, Fristad MA, Youngstrom EA, Findling RL, Phillips ML. *Predicting clinical outcome from reward circuitry function and white matter structure in behaviorally and emotionally dysregulated youth*. Mol Psychiatry. 2016 Sep;21(9):1194-201. [PMID 26903272](#).

32. Bertocci MA, Bebko G, Dwojak A, Iyengar S, Ladouceur CD, Fournier JC, Versace A, Perlman SB, Almeida JRC, Travis MJ, Gill MK, Bonar L, **Schirda C**, Diwadkar VA, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson D, Horwitz SM, Frazier T, Arnold LE, Fristad MA, Youngstrom EA, Findling RL, Phillips ML. *Longitudinal relationships among activity in attention redirection neural circuitry and symptom severity in youth*. Biol Psychiatry Cogn Neurosci Neuroimaging. 2017 May;2(4):336-345. [PMID 28480336](#).

33. Bertocci MA, Bebko G, Versace A, Iyengar S, Bonar L, Forbes EE, Almeida JRC, Perlman SB, **Schirda C**, Travis MJ, Gill MK, Diwadkar VA, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson DA, Frazier TW, Arnold LE, Fristad MA, Youngstrom EA, Horwitz SM, Findling RL, Phillips ML. *Reward-related neural activity and structure predict future substance use in dysregulated youth*. Psychol Med. 2017 Jun;47(8):1357-1369. [PMID 27998326](#).
34. Horowitz-Kraus T, Holland SK, Versace AL, Bertocci MA, Bebko G, Almeida JRC, Perlman SB, Travis MJ, Gill MK, Bonar L, **Schirda C**, Sunshine JL, Birmaher B, Taylor G, Diwadkar VA, Horwitz SM, Axelson D, Frazier T, Arnold EL, Fristad MA, Youngstrom EA, Findling RL, Phillips ML. *Reading related white matter structures in adolescents are influenced more by dysregulation of emotion than behavior*. Neuroimage Clin. 2017 Jun 23;15:732-740. [PMID 28702350](#).
35. Versace A, Sharma V, Bertocci MA, Bebko G, Iyengar S, Dwojak A, Bonar L, Perlman SB, **Schirda C**, Travis M, Gill MK, Diwadkar VA, Sunshine JL, Holland SK, Kowatch RA, Birmaher B, Axelson D, Frazier TW, Arnold LE, Fristad MA, Youngstrom EA, Horwitz SM, Findling RL, Phillips ML. *Using machine learning and surface reconstruction to accurately differentiate different trajectories of mood and energy dysregulation in youth*. PLoS One. 2017 Jul 6;12(7):e0180221. [PMID 28683115](#).
36. **Schirda CV**, Zhao T, Yushmanov VE, Lee Y, Ghearing GR, Lieberman FS, Panigrahy A, Hetherington HP, Pan JW, *Fast 3D rosette spectroscopic imaging of neocortical abnormalities at 3 T: Assessment of spectral quality*. Magnetic Resonance in Medicine, 2017 Sep 14., [PMID 28905419](#).
37. Jennings JR, Heim AF, Sheu LK, Muldoon MF, Ryan C, Gach HM, **Schirda C**, Gianaros PJ., *Brain Regional Blood Flow and Working Memory Performance Predict Change in Blood Pressure Over 2 Years*. Hypertension. 2017 Dec;70(6):1132-1141., [PMID 29038202](#).
38. Sivakanthan S, Ochalski PG, **Schirda C**, Engh JA., *Assessing the Structural Footprint of Minimally Invasive Brain Cannulation on Cerebral White Matter: A Cadaveric Model*. J Neurol Surg A Cent Eur Neurosurg. 2017 Oct 17, [PMID 29041032](#).
39. Horowitz-Kraus T, Woodburn M, Rajagopal A, Versace AL, Kowatch RA, Bertocci MA, Bebko G, Almeida JRC, Perlman SB, Travis MJ, Gill MK, Bonar L, **Schirda C**, Diwadkar VA, Sunshine JL, Birmaher B, Axelson D, Gerry Taylor H, Horwitz SM, Frazier T, Eugene Arnold L, Fristad MA, Youngstrom EA, Findling RL, Phillips ML, Holland SK. *Decreased functional connectivity in the fronto-parietal network in children with mood disorders compared to children with dyslexia during rest: An fMRI study*. Neuroimage Clin. 2018 18:582-590. [PMID 29845006](#).
40. Acuff HE, Versace A, Bertocci MA, [...]; **LAMS Consortium**, Birmaher B, Phillips ML. *White matter - emotion processing activity relationships in youth offspring of bipolar parents*. J Affect Disord. 2019 Jan 15;243:153-164. [PMID 30243195](#).
41. Hagler DJ Jr, [...], **Schirda C**, [...], Dale AM. *Image processing and analysis methods for the Adolescent Brain Cognitive Development Study*. Neuroimage.2019 Nov 15; [PMID 31415884](#).

42. Herting MM, [...], **Schirda C**, [...], Sowell ER. *Correspondence Between Perceived Pubertal Development and Hormone Levels in 9-10 Year-Olds From the Adolescent Brain Cognitive Development Study*. Front Endocrinol (Lausanne). 2021 Feb 18;11:549928; [PMID 33679599](#).
43. Li Y, [...], **Schirda C**, [...], Brown S. *Rates of Incidental Findings in Brain Magnetic Resonance Imaging in Children*. JAMA Neurol. 2021 May 1;78(5):578-587; [PMID 33749724](#).
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45. J Pan, A Antony, A Tal, V Yushmanov, J Fong-isariyawongse, Joanna, M Richardson, **C Schirda**, A Bagic, O Gonen, H Hetherington. *MR spectroscopic imaging at 3T and outcomes in surgical epilepsy*. NMR Biomed. 2021 Jun;34(6) ; [PMID 33751687](#).
46. A Tal, T Zhao, **C Schirda**, H Hetherington, J Pan, O Gonen. *Fast, Regional Three-Dimensional Hybrid (1D-Hadamard 2DRosette) Proton MR Spectroscopic Imaging in The Human Temporal Lobes*. NMR Biomed. 2021 Jun;34(6); [PMID 33754420](#).
47. Chaarani B, [...], **Schirda C**, [...], Brown S., ABCD Consortium *Baseline brain function in the preadolescents of the ABCD Study*. Nat Neurosci. 2021 Aug;24(8):1176-1186; [PMID 34099922](#).
48. Lisdahl KM, [...], **Schirda C**, [...], Heitzeg MM; ABCD Consortium. *Substance use patterns in 9-10 year olds: Drug Alcohol Depend*. 2021 Oct 1;227:108946; [PMID 34392051](#).
49. Klauser A, Strasser B, Bogner W, Hingerl L, Courvoisier S, **Schirda C**, Lazeyras F, Andronesi OC *ECCENTRIC: a fast and unrestrained approach for high-resolution in vivo metabolic imaging at ultra-high field MR*. ArXiv. 2023 Dec 21:arXiv:2305.13822v2 Preprint [PMID 37292485](#).

## Other Publications

Boudreau J., Maksimovic P., **Schirda C.**, *A Search for  $B^0_{s-} \rightarrow B^0_{s-} \bar{B}^0_{s-}$  Oscillations Using the Decay  $B^0_{s-} \rightarrow D^{\pm} X$*  ([CDF/ANAL/BOTTOM/CDFR/5284](#), April 2000)

**List of my publications on PubMed:**

<https://www.ncbi.nlm.nih.gov/myncbi/1jA8Tea78x151/bibliography/public/?sortby=pubDate&direction=ascending>

## Abstracts/Presentations

1. **Schirda, C.**, *A Search for  $B^0_s$ - $\bar{B}^0_s$  oscillations in  $D_s^{*+}$  + Opposite Side Lepton Events at CDF*, American Physical Society, April 2000 Meeting, Long Beach, CA
2. **Schirda, C.** and Boada F, *Using the Sigma Filter for cleaning off-resonance noise in SMART acquired data*, 10-th Scientific Meeting ISMRM, Honolulu, HI, May 2002.
3. **Schirda, C.**, Noll DC and Boada F, *Fast 2D spectroscopic imaging using rosette trajectories*, 11-th Scientific Meeting ISMRM, Toronto, Canada, August 2003.
4. **Schirda, C.** and Boada, F., *Rosette Spectroscopic Imaging*, 46th Experimental NMR Conference, Providence, RI, April 2005.
5. **Schirda, C.** and Boada F, *Experimental Demonstration of Rosette Spectroscopic Imaging (RSI)*, 14-th Scientific Meeting ISMRM, Seattle, WA, May 2006.
6. **Schirda, C.** and Boada F, *Non-Cartesian Self-Rewinding Trajectories for Two-Dimensional Spectroscopic Imaging*, Workshop on Non-Cartesian MRI, Sedona, AZ, February 2007.
7. **Schirda, C.** and Boada F, *Self Rewinding Trajectories for Spectroscopic Imaging*, 15-th Scientific Meeting ISMRM, Berlin, Germany, May 2007.
8. Di Perri C, Dwyer MG, Wack D, Cox JL, Hashmi K, Saluste E, Hussein S, Stosic M, **Schirda C**, Bastianello S, Zivadinov R. *Lesion characteristics at 1.5 and 3 Tesla in multiple sclerosis patients and healthy controls. A morphological and topological quantitative comparison study.* Mult Scler 2008;14 (Suppl 1):P251:S103-104.
9. Di Perri C, Dwyer MG, Cox JL, Hashmi K, Wack D, Hussein S, Stosic M, **Schirda C**, Honajcki D, Saluste E, Mihai C, Weinstock-Guttman B, Munschauer F, Bergamaschi R, Bastianello S, Zivadinov R. *3T predicts better clinical and demographic outcomes in patients with multiple sclerosis than 1.5T. A preliminary case-control study.* Mult Scler 2008;14 (Suppl 1):P250:S102.
10. **Schirda, C.** and Boada F, *Breath-Hold High Resolution Spectroscopic Imaging of the Liver Using Rosette Trajectories*, 16-th Scientific Meeting ISMRM, Toronto, Canada, May 2008.
11. **Schirda, C.** and Boada F, *Optimal number of excitations for a Rosette Spectroscopic Imaging*, 16-th Scientific Meeting ISMRM, Toronto, Canada, May 2008.
12. **Schirda, C.** and Boada F, *Off-Resonance Effects in Non-Conventional Spectroscopic Imaging*, 16-th Scientific Meeting ISMRM, Toronto, Canada, May 2008.
13. **Schirda, C.**, Magnano C., Nayyar N., Hashmi K, Cox J.L., Zivadinov R., *In vivo measurements of neural stem and progenitor cells (NPCs) using MRS and LCModel. Possible marker for Parkinson and Multiple Sclerosis*, 23<sup>rd</sup> ICMRBS, San Diego, CA, August 2008.

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15. **Schirda, C.**, Magnano C., Nayyar N, Cox JL, Dwyer MG, Zivadinov R., *Contrast enhanced susceptibility weighted imaging (SWI) increases detection of iron deposition in patients with multiple sclerosis. A pilot study.*, AAN, Seattle, WA, 2009
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17. **Schirda, C.**, Magnano C., Yeh EA, Weinstock-Guttman B, Drake A.S., Cox J.L., Zivadinov R., *In vivo measurements of neural stem and progenitor cells (NPCs) in patients with multiple sclerosis and normal controls, using MRS and LCModel*, ISMRM, Honolulu, HI, April 2009
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19. D. Wack, M. Dwyer, C. Di Perri, L. Ranza, S. Hussein, J. Durfee, **C. Schirda**, N. Bergsland, J. Cox, R. Zivadinov, *Detection resolution and outline concordance for inter-rater assessment of determining T2 lesions in multiple sclerosis*, ECTRIMS, Düsseldorf, Germany 2009
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28. Zamboni P, Menegatti E, Weinstock-Guttman B, Dwyer MG, **Schirda C**, Malagoni AM, Hojnacki D, Kennedy C, Carl E, Bergsland N, Magnano C, Bartolomei I, Salvi F, Zivadinov R. *Hypoperfusion of brain parenchyma is strongly associated with the severity of chronic cerebrospinal venous insufficiency in patients with multiple sclerosis*. AAN, Toronto, Canada, 2010.
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31. **Schirda C**, Zamboni P, Magnano C, Lindzen E, Wack D, Weinstock-Guttman B, Ramasamy D, Carl E, Hojnacki D, Kennedy C, Dwyer MG, Bergsland N, Cox JL, Salvi F, Zivadinov R. *An objective quantification technique of the cerebrospinal fluid (CSF) flow in the cerebral aqueduct, in patients with multiple sclerosis*. 18-th Scientific Meeting ISMRM, Stockholm, Sweden, 2010.
32. Zamboni P, Menegatti E, Weinstock-Guttman B, Dwyer MG, **Schirda C**, Malagoni AM, Hojnacki D, Kennedy C, Carl E, Bergsland N, Magnano C, Bartolomei I, Salvi F, Zivadinov R. *Hypoperfusion of brain parenchyma is strongly associated with the severity of chronic cerebrospinal venous insufficiency in patients with multiple sclerosis*. 18-th Scientific Meeting ISMRM, Stockholm, Sweden, 2010.
33. Zivadinov R, Zamboni P, Haacke EM, Menegatti E, Weinstock-Guttman B, **Schirda C**, Malagoni AM, Hojnacki D, Kennedy C, Carl E, Bergsland N, Hussein S, Heininen-Brown M, Bartolomei I, Salvi F, Dwyer MG. *Chronic cerebrospinal venous insufficiency and iron deposition on susceptibility-weighted imaging in patients with multiple sclerosis*. 18-th Scientific Meeting ISMRM, Stockholm, Sweden, 2010.

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37. Dwyer MG, Bergsland N, **Schirda C**, Heininen-Brown M, Carl E, Wack D, Poloni GU, Zivadinov R. *A semi-automated analysis pipeline for reproducible SWI analysis of multiple sclerosis pathology.* 18-th Scientific Meeting ISMRM, Stockholm, Sweden, 2010.
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39. R. Zivadinov, C. **Schirda**, M. Heininen-Brown, N. Bergsland, C. Magnano, J. Durfee, C. Kennedy, E. Carl, D. Hojnacki, B. Weinstock-Guttman, M. Dwyer. *Increased iron concentration on susceptibility-weighted imaging is associated with decreased deep-grey matter volumes in patients with multiple sclerosis.* ECTRIMS, Gothenburg, Sweden, 2010.
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41. A. Lopez-Soriano, R. Zivadinov, R. Galeotti, D. Hojnacki, E. Menegatti, C. **Schirda**, A.M. Malagoni, K. Marr, C. Kennedy, I. Bartolomei, C. Magnano, F. Salvi, B. Weinstock-Guttman, P. Zamboni. *Use of magnetic resonance venography for visualisation of the internal jugular veins in patients with multiple sclerosis diagnosed with chronic cerebrospinal venous insufficiency and treated with percutaneous angioplasty.* ECTRIMS, Gothenburg, Sweden, 2010.
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44. G. Poloni, M. Dwyer, F. Parker, C. Magnano, **C. Schirda**, N. Bergsland, R. Zivadinov. *Relation between quantitative venous vasculature assessment on susceptibility-weighted imaging and haemodynamic MRI metrics in multiple sclerosis patients*. ECTRIMS, Gothenburg, Sweden, 2010.
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46. **C. Schirda**, O. Andronesi, T. Zhao, G. Sorensen and F. Boada. *Short Acquisition Time 3D High Resolution (1cc) In Vivo Brain 1H MRSI using LASER-RSI*. 19-th Scientific Meeting ISMRM, Montreal, Canada, 2011.
47. Heim A, Muldoon M, Owens J, Sheu L, **Schirda C** and Jennings JR. *Mean Cerebral Flow (CBF) during an N-Back task predicts cardio-metabolic risk (CMR)*. 52<sup>nd</sup> Meeting of Society for Psychophysiological Research, New Orleans, LA, 2012.
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50. Stan A, **Schirda CV**, Bertocci M, Bebko G, Chase, H Phillips ML. *Examining Dorsomedial Prefrontal Cortical Glutamate Concentration – BOLD Signal Relationship during Emotion Processing*. 56<sup>th</sup> Annual Meeting of the American Academy of Psychoanalysis and Dynamic Psychiatry (AAPDP). Philadelphia, PA, 2012
51. **C. Schirda**, T. Zhao, O. Andronesi, and F. Boada. *In-vivo brain 3D RSI (Rosette Spectroscopic Imaging) with spherical/ellipsoidal encoding. Comparison to 3D RSI with cylindrical encoding and to ellipsoidal CSI*. 21-st Scientific Meeting ISMRM, Salt Lake City, UT, USA, 2013.
52. Ahrens ET, Balducci A, Helfer B, Wesa A, O'Hanlon C, **Schirda C**, Bartlett D, and Kalinski P. *First clinical experience using fluorine-19 MRI to track immunotherapeutic dendritic cells in colorectal cancer patients*. 22-st Scientific Meeting ISMRM, Milano, Italy, 2014.



53. **C. Schirda**, T. Zhao, Hetherington H. *PTX-RSI at 7T: Fast in-vivo brain spectroscopic imaging at UHF using an 8-channel parallel transmit system, a shim gradient insert coil and rosette trajectories*. 22-st Scientific Meeting ISMRM, Milano, Italy, 2014.
54. **Claudiu Schirda**, Tiejun Zhao, Julie Pan, and Hoby Hetherington, *Rosette Spectroscopic Imaging with Hadamard Encoding*. In Proceedings of the 23rd Annual Meeting of ISMRM, Toronto, Canada, 2015. Abstract 987.
55. **Claudiu Schirda**, Tiejun Zhao, Ovidiu Andronesi, James Mountz, Fernando Boada, and Hoby Hetherington, *In-vivo brain fast Rosette Spectroscopic Imaging (RSI) with reduced gradient demands/improved patient comfort and a processing pipeline with automated LCMoel quantification, for all acquired voxels*. In Proceedings of the 23rd Annual Meeting of ISMRM, Toronto, Canada, 2015. Abstract 2446.
56. **Claudiu Schirda**, Tiejun Zhao, Shailesh Raval, SoJung Lee, Silva Arslanian, Hoby Hetherington, and Tamer Ibrahim, *Functional 2D 31P MRSI in the leg during exercise, using a dual-tuned 1H/31P volume coil*. In Proceedings of the 23rd Annual Meeting of ISMRM, Toronto, Canada, 2015. Abstract 4236.
57. Victor E. Yushmanov, Yoojin Lee, **Claudiu Schirda**, Hoby P. Hetherington, and Jullie W. Pan, *Automated pipeline for processing and analyzing MR Spectroscopic Imaging and segmentation data of human brain*. In Proceedings of the 23rd Annual Meeting of ISMRM, Toronto, Canada, 2015. Abstract 4725.
58. Genna Bebeko, Michele Bertocci, Henry Chase, Amanda Dwojak, Lisa Bonar, Jorge Almeida, Susan Perlman, Amelia Versace, **Claudiu Schirda**, Michael Travis, Mary Kay Gill, Christine A Demeter, Vaibhav Diwadkar, Jeffrey Sunshine, Scott K Holland, Robert Kowatch, Boris Birmaher, David Axelson, Sarah Horwitz, Thomas Frazier, Eugene Arnold, Mary Fristad, Eric Youngstrom, Robert Findling, Mary Phillips *Altered Resting State Connectivity in Behaviorally and Emotionally Dysregulated Youth in the Longitudinal Assessment of Manic Symptoms (LAMS) Study*. 70th Annual Scientific Meeting of the Society-of-Biological-Psychiatry, Volume: 77. Atlanta, Georgia, US. May 2015
59. **Claudiu Schirda**, Tiejun Zhao, Jullie W Pan, Hoby P Hetherington, *Rosette spectroscopic imaging of human brain at 7 T*. 10th Biennial 2015 Minnesota Workshop on High and Ultra-High Field Imaging, October 1-3, 2015 Minnesota, US.
60. **Claudiu Schirda**, Tiejun Zhao, Hoby Hetherington, Victor Yushmanov, and Jullie Pan, *Rosette Spectroscopic Imaging (RSI) of human brain at 7T*. In Proceedings of the 24th Annual Meeting of ISMRM, Singapore, 2016. Abstract 2351.
61. **Claudiu Schirda**, Tiejun Zhao, Yoojin Lee, Hoby Hetherington, Jullie Pan, *Spectral Quality: Rosette Spectroscopic Imaging in Human Brain at 3T*. In Proceedings of the 25<sup>th</sup> Annual Meeting of ISMRM, Honolulu, Hawaii, 2017. Abstract 5480.

62. V. E. Yushmanov, J. W. Pan, **C. V. Schirda**, H. P. Hetherington, and J. T. Becker. *Assessment of brain abnormalities in HIV infection by 3D Rosette Spectroscopic Imaging*. Utrecht, the Netherlands, MRS Workshop 2018 Metabolic Imaging.
63. JW Pan, CH Moon, **C Schirda** and HP Hetherington. *7T rosette spectroscopic imaging in human brain*. Utrecht, the Netherlands, MRS Workshop 2018 Metabolic Imaging.
64. O Gonen, A Tal, **C Schirda**, HP Hetherington, JW Pan. *Fast, Regional 3D Hybrid (1D-Hadamard 2D-Rosette) Proton MRSI in The Human Brain*. Utrecht, the Netherlands, MRS Workshop 2018 Metabolic Imaging.
65. V Yushmanov, J Pan, **C Schirda**, H Hetherington, J Alger, P Barker, T Parrish, N Sacktor, M Povazan and J Becker, *Metabolic abnormalities in cingulate gyrus in HIV infection by 3D rosette spectroscopic imaging*. In Proceedings of the 27th Annual Meeting of ISMRM, Montreal, Canada, 2019. Abstract 2540.
66. J Pan, C Moon, V Yushmanov, **C Schirda**, F Lieberman and H Hetherington, *Planar rosette spectroscopic imaging at 7T*. In Proceedings of the 27th Annual Meeting of ISMRM, Montreal, Canada, 2019. Abstract 0246.
67. **Claudiu Schirda**, *Superresolution MRSI: a desirable acquisition trajectory*. In Proceedings of the 27th Annual Meeting of ISMRM, Montreal, Canada, 2019. Abstract 2496.
68. J Behari, L Graham, R Wang, **C Schirda**, A. Borhani, B. Methé, K Li, A Morris, H Luu, S Palmieri, JM Yuan. *Dynamics of Hepatic Steatosis Resolution and Changes in Gut Microbiome with Intensive Weight Loss in Nonalcoholic Fatty Liver Disease* AASLD 2020, p1721
69. J Pan, A Antony, V Yushmanov, **C Schirda**, H Hetherington. *Rosette spectroscopic imaging of epilepsy at 3T*. ISMRM 2020, p1859
70. A Klauser , B Strasser , W Bogner , H Lukas, **C Schirda**, B Thapa, D Cahill, T Batchelor, F Lazeyras, and O Andronesi. *ECcentric Circle ENcoding TRajectorLes for Compressed-sensing (ECCENTRIC): A fully random non-Cartesian sparse Fourier domain sampling for MRSI at 7 Tesla*. ISMRM 2021, o835
71. **C Schirda**, *Using gradient-readout, fast spectroscopic imaging and a 3D multi-echo GRE acquisition for scanner Quality Assurance (QA)*. ISMRM 2021, p3343
72. A Klauser , B Strasser , W Bogner , H Lukas, **C Schirda**, B Thapa, D Cahill, T Batchelor, F Lazeyras, and O Andronesi. *Whole-brain high-resolution MRSI at 7T with non-Cartesian FID-ECCENTRIC in glioma patients*. ISMRM 2022, p4799

## Awards & Honors

- The 46th Experimental NMR Conference, *Student Travel Award* (Providence RI, April 2005)
- Comprehensive Examinations best result (University of Pittsburgh, May 1998)
- Qualifying Examinations best result (University of Pittsburgh, March 1998)
- TEMPUS *Fellowship* (Free University of Amsterdam, Nederland's, 1995-1996)
- *National Merit Fellowship* (University of Bucharest, Romania, 1992-1997)
- Selected in the Romanian National Preliminary Team for the International Olympiad of Physics (1990 and 1991)
- Second Place in National Physics Contest (Romania, 1991)
- First Place in National Physics Contest (Romania, 1990)
- Valedictorian 1989, 1990, 1991
- Special Award for Experimental Session in National Chemistry Contest (Romania, 1988)

## Affiliations/Memberships

- International Society of Magnetic Resonance in Medicine (since 2002)
- American Academy of Neurology (since 2008)
- American Board of Medical Physics (ABMP) – acquiring certification (passed first two written examinations; oral examination to complete)