

„Czech Austrian Workshop on Magnetic Resonance Imaging and Spectroscopy 2025”
(Project number: 102p2)

Final Report

The goal of this project was to organize international workshop on Magnetic Resonance for Czech and Austrian research fellows and students with the main goal to familiarize the audience with the scientific projects and recent advances in medical research sites focused on magnetic resonance imaging and spectroscopy. These traditional workshops are organized by participating groups from Vienna and Prague since 1995. We gather the participants from Charles University in Prague, Institute for Clinical and Experimental Medicine Prague, Medical University of Vienna, Medical University Graz, Medical University of Innsbruck, Carinthia University of Applied Sciences Klagenfurt, CEITEC (the Central European Institute of Technology) and Institute of Scientific Measurement, Czech Academy of Sciences, Brno.

The workshop held took place in Frein an der Mürz, Freinerhof hotel from 20th till 22nd October 2025. It was attended by 73 scientists from both countries (40 supported by AKTION). A great mix of young scientists at all graduation levels taking part and participating at the workshop for first time up to senior scientist returning to the workshop regularly was achieved. Presentation of study results and work-in-progress presentations from different fields of biomedical MR research sparked lively presentations and discussion. This year graduate or undergraduate students could present their research ideas or results of their work to international audience again (total number of presentations 34 in eight scientific sessions including one keynote lecture, see attached program of the workshop). In the beginning of each session senior scientists and session chairs presented their institutions and labs. Students especially valued the opportunity to give their talks on this motivated and friendly platform.



Presentation covered most of the topics related to magnetic resonance with the focus on:

- i) Multiparamagnetic MR imaging (diffusion, relaxometry)
- ii) Perfusion MR imaging and angiography: Data processing
- iii) Preclinical molecular MR spectroscopy and imaging
- iv) Advances and new approaches in MR hardware and software – coil design
- v) X-nuclei MR imaging and spectroscopy
- vi) Optimization of RF pulses
- vii) 3D printing radiology education and practice, virtual reality
- viii) Quantitative MRS, MRSI
- ix) Clinical field strengths
- x) Outreach and communication of science to the public

The keynote of the scientific delivered by distinguished guest le appointed professor of MR-Physics Christoph Juchem, who spoke on p clinical field strengths. His talk dr attention and sparked a lively, in-dep



Dr. Saba Shirvani, Siemens Healthineers expertise and plan



The complete workshop program, including presentation titles and the list of participants, is attached (Czech-Austrian Workshop on MRI and MRS 2025.pdf)

Further aims of the workshop included discussions and consultations on MR sequences and data evaluation; the design and construction of radiofrequency coils; the harmonization of quantitative parameters (e.g., for perfusion imaging) to assess MR image quality; and the preparation of joint projects.

All participants were delighted by high scientific and communicative value of vast majority of student's contribution. At the conclusion of the meeting, awards were presented to the two best student presentations. Anna Duguid, MUW for her work on advanced postprocessing of ^2H -MRSI data and Jiří Vitouš, ISI Brno for his work on analysis of MR hardware performance were awarded.

The workshop was complemented by short hiking tours to nearby mountains and get-together event for all participants in the evening of Oct 21st.

Accommodation and lodging of 40 participants from both countries, and transport participants from Czech Republic was covered by AKTION financial support. Cost for six students and one supervisor (Dr. Bogner) involved in the DocConnect PhD project of MUW and University of Applied science Carinthia were covered by Austrian Science Fund (FWF). Remaining costs were covered by Siemens Healthineers Austria and Center for Medical Physics and Biomedical Engineering, MUW

In short, the Czech Austrian workshop on magnetic resonance imaging and spectroscopy 2025 was very successful.

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