

IUCr 2026 Satellite Workshop on Magnetic Structure Determination

2026 Congress of the International Union of Crystallography

BMO Center, Calgary, Alberta, Canada

10-11 August 2026

Organized by the IUCr Commission on Magnetic Structures

Primary Organizer: Ovidiu Garlea

Description

Advances in spintronics and quantum materials rely on understanding magnetic structures, since atomic-scale magnetic arrangements determine many functional properties. Neutron diffraction—especially with modern instrumentation—allows researchers to solve increasingly complex magnetic structures. However, effective use of existing software and analytical tools requires proper training.

The Magnetic Structure Determination Workshop combines lectures and hands-on sessions to make magnetic structure analysis more accessible and reproducible. Participants learn key concepts such as magnetic symmetry and representation analysis, and gain practical experience using tools like ISODISTORT, the Bilbao Crystallographic Server, and Rietveld refinement programs while working through real neutron diffraction datasets.

Designed for graduate students, early-career scientists, and researchers in crystallography and magnetism, the workshop—endorsed by the IUCr Commission on Magnetic Structures—provides both conceptual foundations and practical skills under expert guidance.

Monday 10 Aug 2026

08:30-09:00 Check-In & Welcome Desk Open

09:00-09:15 Welcome and workshop overview - [Ovi Garlea](#)

09:15-10:00 Magnetic symmetry-based modeling of magnetic structures - [J. Manuel Perez-Mato](#)

10:00-10:45 Representation theory in magnetic Structure analysis- [Branton Campbell](#)

10:45-11:00 Break

11:00-11:45 Combining the Representation theory with Magnetic Space group approach. - [Branton Campbell](#)

11:45-13:00 Demonstration of the tools at the Bilbao Crystallographic server: MAXMAGN, MVISUALIZE, k-SUBGROUPSMAG and MAGNDATA database - [J. Manuel Perez-Mato](#)

13:00-14:00 LUNCH

14:00-14:45 Symmetry of incommensurate magnetic structures: magnetic superspace groups - [J. Manuel Perez-Mato](#)

14:45-15:00 Break

15:00-16:30 Introduction to ISODISTORT and hands-on examples - [Branton Campbell](#)

16:30-16:45 Break

16:45-17:30 Guidelines for communicating commensurate magnetic structures and real case examples - [Françoise Damay](#)

17:30-18:30 Neutron scattering techniques and other complementary experimental tools for magnetic structure determination - [Javier Campo](#)

Tue 11 Aug 2026

09:00-10:30 Introduction to FullProf and practical example of basis-function refinement under magnetic space-group constraints (using ISODISTORT input) - [Juan Rodríguez-Carvajal](#)

10:30-10:45 Break

10:45-12:00 Demonstration of FullProf refinement of a commensurate magnetic structure (using BCS tools - [Stuart Calder](#)

12:00-12:15 Break

12:15-13:00 Introduction to JANA - [Margarida Henriques](#)

13:00-14:00 LUNCH

14:00-15:15 Demonstration of JANA refinement of an incommensurate magnetic structure - [Margarida Henriques](#)

15.15-15.30 Break

15:30-17:00 Introduction to GSAS2 and example of refinement of commensurate magnetic structure from TOF powder diffraction data - [Keith Taddei](#)

17:00-17:15 Closeout: Questions and discussion - [Ovi Garlea](#)