Summer School on Mathematical Crystallography
Nancy, France, 3 - 7 June 2019

The IUCr Commission on Mathematical and Theoretical Crystallography (MaThCryst) has organized the fourth Summer School in Nancy (previous editions were organized one in 2005 and two in 2010). The school was held at the Faculty of Sciences and Technologies of the Université de Lorraine and received financial support from IUCr, ECA, the French Association of Crystallography, the French Society of Mineralogy and Crystallography, the Grand Nancy Metropolitan Government, the Doctoral School of Physics, Chemistry and Materials and the CRM2 laboratory.

The school aimed at providing a solid background in fundamental crystallography, with special emphasis on those aspects that are less and less taught in university curricula. The first two days were entirely devoted to the fundamentals: symmetry, periodicity, lattices, point and space groups in two and three dimensions, stereographic projection of crystal forms and orthogonal projections of space groups and equivalent atomic positions. The third and fourth days concentrated on matrix algebra applied to the description of crystal structures, crystallographic calculations, change of coordinate systems and their effect of the Hermann-Mauguin symbols of space groups, normalizers of point and space groups, equivalent descriptions crystal structures, group-subgroup relations of point and space groups. The theory was accompanied by exercises on the Bilbao Crystallographic Server. The last day was dedicated to reciprocal space: introduction to the reciprocal lattice, geometric interpretation and derivation of reflection conditions, symmetry considerations and restraints and constraints in structure refinement from single-crystal X-ray diffraction data. Lecturers were Prof. Massimo Nespolo (Université de Lorraine), Dr. Gemma de la Flor Martin (Karlsruhe Institute of Technology) and Prof. Benoît Guillot (Université de Lorraine), who were assisted by two tutors, Dr. Berthold Stöger (Technical University of Vienna) and Dr. Isabella Pignatelli (Université de Lorraine)

The school was attended by forty participants representative of 20 nationalities, and of 26 institutions from 13 countries. Ten grants to students and young scientists (half of which female) were attributed to facilitate their participation. A photo gallery will soon be available at the IUCr website. Slides and didactic material are available from the School website and from the MaThCryst repository.

Forthocoming activities of the commission are announced at the Meetings and Schools page.