Commission B5 Laboratory Astrophysics - Activity report 2021

The purpose of the Laboratory Astrophysics Commission (B5) is to address the multidisciplinary needs and requirements of modern astronomy and planetary science. As a result, the Commission encompasses the four fundamental research areas that generate astrophysical data needs: atomic and molecular astrophysics, physics and chemistry of solid materials and condensed matter (dust and ices), plasma astrophysics, and nuclear and particle astrophysics. The Commission embraces interdisciplinary studies crossing physical, chemical, biological, geological sciences of relevance to astronomy, including experiment, theory, and modeling, from the nuclear and atomic/molecular level to application on astronomical scales.

In summary, the Laboratory Astrophysics Commission is a strongly cross-disciplinary commission with the aim to assist all IAU members in providing the data needed to interpret and understand astronomical observations and to promote Laboratory Astrophysics.

The commission had two working groups at the start of 2021, namely “Spectroscopic and Radiative Data for Molecules”, and “High-Accuracy Stellar Spectroscopy”. The former will continue for another three-year cycle, while the latter was wound up after running its course of two three year cycles. A new Inter-Commission B2-B5 working group on “Laboratory Astrophysics Data Compilation, Validation and Standardisation: from the Laboratory to FAIR Usage in the Astronomical Community” was formed.

The commission proposed two sessions for the forthcoming general assembly in August 2022; one a general business meeting for the commission including presentations of national and regional activities in laboratory astrophysics, and the other based around the proposed activities of the new working group. The commission has been involved in the preparation of “IAUS 371: Honoring Charlotte Moore Sitterly: Astronomical spectroscopy in the 21st century” to be held as a focus meeting at the general assembly.