Atelier sur le traitement d'images astronomiques appliqué aux observations aurorales planétaires

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Lieu : Université de Cergy-Pontoise, Maison internationale de la Recherche (MIR), Site de Neuville sur Oise (RER A Neuville Université), Grand Auditorium

Résumé :
The Earth's 'northern' and 'southern lights' are examples of auroral emission, light which shines from the polar regions of all magnetised planets in our Solar System. Studying the brightness and shape of this emission at the Earth and other planets has provided us with enormous scientific insight into the physics of how the atmosphere of a planet interacts with its surrounding space environment. For example, the bright 'oval' of auroral light surrounding the Earth's magnetic pole arises from the interaction between the Earth's magnetic field and the solar wind, a stream of charged particles continually emanating from our Sun. Jupiter's analogous oval, on the other hand, is mainly due to the interaction between that planet's magnetic field and the charged particles emanating not from the Sun, but from Jupiter's volcanic moon, Io. With the advent of space missions about to re-visit the Jovian system (e.g. NASA's JUNO, arriving in July 2016; and ESA's JUICE, planned for launch in 2022), now is a critical time for experts in both auroral observation and image analysis and processing to congregate and plan the provision of useful data analysis tools and algorithms for the scientific communities involved in these projects. This workshop will bring together auroral experts, many of whom are involved with JUNO and / or JUICE, for this specific purpose. Invited talks will present some examples of weak auroral signatures to be searched together with software tools for processing auroral images (such as VOISE), but contributed talks on techniques and other types of observations are warmly welcome. The scientific challenge which we are aiming to meet is multifold: how to improve the current techniques in order to unambiguously detect weak auroral emissions and characterise the limit of auroral brightness detection, and explore data mining techniques available in the armoury of machine learning to classify and analyse auroral forms and features.

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