Curricular Unit

Advanced Physics Topics 1

Module

Jets in Astrophysics: from Stars to Active Galaxies (15 hrs TP)

Type

Lecture course

Contact hours

15 h

Professor/Researcher in charge

Christophe Sauty, (Observatoire de Paris, CAUP)

Summary of Contents

Give an overview of the accretion and jet mechanisms. Give the basic tools understanding the dynamics and radiation of such flows and the universality of such process going from Young Stellar Jets to Extragalactic ones.

Chapter I is a general overview of the observations of Young Stellar Jet/Accretion disk systems and other relativistic galactic and extragalactic ones. This chapter focus on our present understanding of stellar evolution associated with such systems and the general classification of relativistic sources.

Chapter II focalises on basic analytical model for spherical and one dimensional accretion and ejection dynamics.

Chapter III is an extension of the previous chapter to more complex dynamical systems 2D or 3D, such as standard accretion disks and magnetized jets. A rapid overview of numerical simulations is given at the end of the chapter.

Chapter IV gives the general basic tools for understanding the radiative processes from galactic to extragalactic objects, illustrating the fundamental differences on the observations of those systems.

References

Lecture Notes

Evaluation

Final Exam

Juri

Christophe Sauty