

Foreword

How do stars form in molecular clouds? When and how are planetary systems assembled in circumstellar disks? How has the star formation rate varied over cosmological timescales? In the last decade, considerable progress has been made on these fundamental issues linked to the star formation process and the physics of young stellar objects and their circumstellar environment. Improved analytical and numerical models have brought new insight into the phase of cloud collapse and fragmentation as well as into the formation and evolution of circumstellar disks that are prone to form planets. At the same time, the maturation of observational techniques, such as high angular resolution imaging, and the advent of powerful telescopes on the ground and in space, have revealed new exciting aspects of the formation and early evolution of stars from the solar neighborhood to highly redshifted galaxies.

The Xth Aussois School on Stellar Physics took place on September 18-22, 2000, and was intended to draw an up-to-date view of current results and concepts in the field of "Star Formation and the Physics of Young Stars". The school is primarily directed towards Ph.D. students in astrophysics and researchers from neighbouring astrophysical fields but is also an opportunity for those who work in this field to meet in a stimulating and yet relaxed atmosphere.

Nearly 60 participants attended the school and benefited from week-long high-quality courses that depicted the current state of understanding of the various aspects of star formation, from the local to the cosmological scale: initial conditions in molecular clouds, gravitational collapse, pre-main sequence evolution, theory and observations of accretion disks and of the related mass ejection phenomenon, high energy processes characterizing stellar youth, observational studies of resolved young stellar populations in external galaxies, and the cosmological history of star formation.

We hope that the reader will find in these Proceedings as much interest as the audience had in listening to the talks and interacting with the speakers, whom we would like to thank here for their disponibility and the excellent quality of their conferences. We also thank all the participants for the friendly atmosphere they brought to the school, the Formation Permanente du CNRS and the Programme National de Physique Stellaire for funding the annual Aussois School on Stellar Physics, and particularly F. Bouillet, N. Thiéry, M. Michel and M. Petit for taking care of all administrative and organisational aspects, as well as the Director and employees of the Centre Paul Langevin for their competence and hospitality; and, last but not least, Jean-Philippe Beaulieu and Daniele Briot for taking and prodiving the pictures.

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