

Foreword

It has been known since the 1950's that some stars possess a magnetic field, whose strength can reach a few kilogauss. In the last ten years, much weaker fields have been detected in many stars of various types. This breakthrough was made possible thanks to the advent of a new generation of powerful spectropolarimeters, in particular ESPaDOnS which equips the Canada-France-Hawaii Telescope since 2005 and NARVAL which has been installed at the Pic du Midi Observatory at the end of 2006. It has become clear that most, if not all, low-mass stars regenerate constantly their field through a dynamo mechanism that could be similar to that operating in the Sun, whereas only a small fraction of the more massive stars are magnetic at the currently detectable level and harbor a rather steady field, which is probably of fossil origin. Models are being built to explain the observed properties, and to explore the impact of magnetism on the structure and evolution of stars. Stellar magnetism has thus become a very active and promising field of research, involving vast international collaborations that gather both observers and theoreticians.

For this reason the French National Program for Stellar Physics (PNPS) decided to choose Stellar Magnetism as the theme of the XVIIth edition of its annual Summer School on Stellar Physics. The school took place on September 24–28, 2007 in La Rochelle, on the French Atlantic coast. Its program was drafted with Claude Catala, whereas Annick Oger, from the GEPI department of the Paris Observatory, provided the secretarial support. Eminent specialists – observers, instrumentalists and theoreticians – kindly accepted to lecture at the school, and to present the latest results of the field. We express our warm thanks for their brilliant contributions; they are now gathered in this volume which, we hope, will benefit to many readers.

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