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Preface

The formation of protoplanetary disks and planets around new-born stars closely relates to the fundamental question *"Are we alone in the universe?"*. Hence, the study of disks and their link to planet formation is undoubtedly one of the main science drivers for current astrophysical research worldwide, and for the design of future telescopes and astronomical instrumentation. The observational study of protoplanetary disks, the birthplaces of exoplanets, requires a carefully concerted, multi-wavelength and multi-instrument approach to reveal the physical, thermal, and chemical structure of dust and gas in different parts of the disks.

The FP7 project *DiscAnalysis* (DIANA) has established a major European initiative to collect public and proprietary multi-wavelength continuum and line data for protoplanetary disks, and analyse and interpret these data by means of novel high-quality disk models, see http://www.diana-project.com/. In the summer school *Protoplanetary Disks: Theory and Modeling meet Observations*, we discuss the available types of observational data, and introduce the theoretical concepts and foundations that are built into our current radiative transfer and thermo-chemical models.

The summer school was held from 16th to the 20th of June 2014 at the Hotel Amelander Kaap on the Island of Ameland, The Netherlands. The School was attended by 45 PhD students and post-docs from 19 countries around the world. Ten lecturers from the DIANA team explained basic theories ranging from the formation and evolution of protoplanetary disks, chemistry and radiative transfer in disks to the diversity of observational data such as SEDs, images, line emission and interferometry. Several lectures focused on disk modeling and its application to observations including limitations, pitfalls and outlook to new instrumentation. We hope that this collection of lectures contributes to the development of new university lecture courses about star and planet formation, and that it will inspire the next generation of scientists to continue unraveling the mysteries involved.

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