Radiation mechanisms of astrophysical objects: classics today

Proceedings of the conference
in honor of the 100th birthday of Academician V.V. Sobolev
held at St. Petersburg on September 21–25, 2015

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Studies of radiation mechanisms and processes of spectra formation in astronomical objects are among the fundamental tasks of modern astrophysics. A powerful tool for the solution of these problems is provided by the theory of radiative transfer, which has been substantially contributed to and developed by Victor Victorovich Sobolev. The conference highlighted recent advances in the field of the interests of V.V. Sobolev. The proceedings provide the permanent record of what was presented at the meeting and include various papers on radiative transfer theory, interstellar matter, stellar atmospheres and circumstellar matter, planetary atmospheres, and high-energy astrophysics and cosmology.

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Contents

Preface

We are very pleased to introduce the proceedings of the international conference "Radiation mechanisms of astrophysical objects: classics today" held at the St. Petersburg State University and Main (Pulkovo) Astronomical Observatory from September 21 to 25, 2015. The meeting was related to the 100th anniversary of Academician Victor Victorovich Sobolev celebrated on September 2, 2015 and highlighted recent advantages in the research fields to which V.V. Sobolev contributed prominently.

The conference was highly successful. It included the plenary sessions featuring review talks by internationally recognized experts as well as a memorial session. Original scientific results were presented in the sections: i) radiative transfer theory; ii) interstellar matter; iii) stellar atmospheres, circumstellar matter, and planetary atmospheres; iv) high-energy astrophysics and cosmology. There were all together about 130 contributions, with many papers being focused on the development of Sobolev's ideas in modern astrophysics. The program, book of abstracts, some presentations, a large photogallery and other materials including these proceedings are available at the conference web site *http://www.astro.spbu.ru/Sobolev100*.

The proceedings provide the permanent record of what was presented at the meeting. The plan of the book follows the conference program: four parts of the book correspond to the above mentioned sections. Each part begins with review papers, then the oral presentations follow in the alphabetic order of their first author, and finally a few poster papers are placed. In an appendix written by V.V. Ivanov in Russian, one can find a brief biography of V.V. Sobolev, a clear resume on his main scientific achievements and a brilliant description of his features as a pedagogue, an organizer, and just a person. It should be added that extended versions of 10 conference papers on radiative transfer theory have been published in the special issue of Journal of Quantitative Spectroscopy and Radiative Transfer (2016, vol. 183) entitled "Victor V. Sobolev and his scientific legacy."

We would like to thank participants for their contributions to the conference and these proceedings. The meeting could not also have happened without the Local Organizing Committee, who made a tough work to assemble and run the conference, and the Scientific Organizing Committee, who guided the direction of the conference and assisted with its program. We are glad to acknowledge the financial support from the St. Petersburg State University and the Russian Foundation for Basic Research. We are also deeply indebted to the Byurakan Astrophysical Observatory that sponsored the publication of the proceedings. Last but not least, we would like to thank Yulia Milanova, Roman Baluev, and Alexander Pocheketa for their very valuable assistance in preparation of this book.

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