

PREFACE

Nuclear Physics in Astrophysics III

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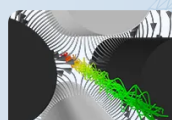
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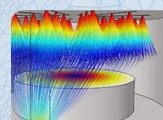
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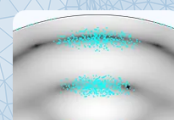
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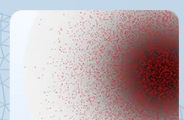
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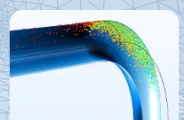
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PREFACE

Nuclear Physics in Astrophysics III

The Europhysics Conference ‘Nuclear Physics in Astrophysics III’ (NPA3) took place from 26–31 March 2007 in Dresden, Germany, hosted by Forschungszentrum Dresden-Rossendorf. The present special issue of *Journal of Physics G: Nuclear and Particle Physics* contains all peer-reviewed contributions to the proceedings of this conference.

NPA3 is the third conference in the Nuclear Physics in Astrophysics series of conferences devoted to the interplay between nuclear physics and astrophysics. The first and second editions of the series were held in 2002 and 2005 in Debrecen, Hungary. NPA3 has been organized under the auspices of the Nuclear Physics Board of the European Physical Society as its XXI Divisional Conference.

The conference marks the 50th anniversary of the landmark paper B2FH published in 1957 by E M Burbidge, G R Burbidge, W A Fowler and F Hoyle. A public lecture by Claus Rolfs (Ruhr-Universität Bochum, Germany) commemorated the progress achieved since 1957.

NPA3 aimed to bring together experimental and theoretical nuclear physicists, astrophysicists and astronomers to address the important part played by nuclear physics in current astrophysical problems. A total of 130 participants from 71 institutions in 26 countries attended the conference, presenting 33 invited and 38 contributed talks and 25 posters on six subject areas. The astrophysical motivation and the nuclear tools employed to address it are highlighted by the titles of the subject areas:

Big Bang Nucleosynthesis

Stellar Nucleosynthesis and Low Cross Section Measurements

Explosive Nucleosynthesis and Nuclear Astrophysics with Photons

Nuclei far from Stability and Radioactive Ion Beams

Dense Matter in Neutron Stars and Relativistic Nuclear Collisions

Neutrinos in Nuclear Astrophysics

The presentations and discussions proved that Nuclear Astrophysics is a truly interdisciplinary subject. The remarkable progress in astronomical observations achieved in recent years is matched by advances in astrophysical modelling, and new theoretical approaches in nuclear physics are spurred by a wealth of new experimental data. It has been recognized by all participants that a joint effort by these disciplines is required in order to further our understanding of stars in all the phases of their lifespan and of the creation of energy and the chemical elements.

The conference took place in the city of Dresden, in the geographical heart of Europe. Dresden is a traditional centre of culture and the fine arts, and its recently reconstructed Frauenkirche

(Church of Our Lady) symbolizes the desire of Europeans to leave war and division behind them and revive their traditionally lively cultural and scientific exchange. Scientists from all parts of Europe attended NPA3, as well as participants from North America, Japan and the Near East. Especially encouraging was the great echo among young scientists whose devotion promises a bright future to the field.

Fresh, dedicated and interdisciplinary efforts are indeed needed to solve some of the astrophysical puzzles presented at NPA3. New satellite observatories, unprecedented computing power, and new experimental facilities such as underground accelerator laboratories and radioactive ion beam facilities will contribute to these efforts. We look forward to hearing about these and other developments in the fourth conference of the Nuclear Physics in Astrophysics series (NPA4) which is to be held in Gran Sasso, Italy in 2009.

The financial support of the hosting institution Forschungszentrum Dresden-Rossendorf, of the Free State of Saxony and of the European Physical Society has been essential in ensuring the success of the conference. We thank the Publisher and the staff of *Journal of Physics G: Nuclear and Particle Physics* for the fruitful collaboration in preparing this issue.

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Guest Editors

Cover image of Dresden by C. Preußel, Forschungszentrum Dresden-Rossendorf
The conference website is located at <http://www.fzd.de/npa3>