

Preface

The Square Kilometre Array will provide more than one order of magnitude improvement in sensitivity compared with any existing radio telescope over a wavelength range of several hundred to one, from decametric to microwave wavelengths. It will revolutionize the study of the most abundant element in the Universe, hydrogen, from the epoch of reionization to the present day, probing the onset formation period of the very first stars, look in depth to proto-planets and, through the precision timing of pulsars, detect the distortions of space-time due to gravitational radiation. SKA is a sensor machine spawning 3,000 km in extension and a collecting area of more than 1 km², using technologies of twenty-first century. SKA will allow the study at radio wavelengths of a wide range of phenomena initially studied at other wavelengths as well as opening a new discovery window on new phenomena at radio wavelengths, as has been the case with radioastronomy whenever a jump in sensitivity happened. The JENAM SKA Symposium was aimed at bringing these diverse opportunities to the attention of both theoretical and observational astronomers working at all wavelengths, including the potential for synergies with other facilities. But SKA represents also a technological challenge with recognized societal impacts on Information and Computing Technologies and Green Energy, as it was demonstrated at the COST conference in Rome, 2010. This Symposium was timely as Portugal is well suited to provide key insight on these aspects of new detector technologies and renewable energy for this project by hosting the European Site Emulator for the Aperture Array Verification Program, providing a testing platform for some of the developments for the Advanced Instrumentation program of the SKA.

We therefore brought to the attention of the broader astronomical community the scientific potential of the SKA by discussing its scientific priorities and their impact on the design of the whole project, in a crucial year for the project. We explored also the synergies between the SKA and other next generation astronomical facilities in different wavelength domains such as the ALMA, ELTs, LSST, JWST, GRE, IXO,

Gaia and Euclid and high energy facilities (Auger) in the true spirit of JENAM events. To this endeavor we warmly thank Ken Kellerman (NRAO) for helping us shape the program and all the support from the European SKA Consortium (ESKAC).

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The Square Kilometre Array: Paving the way for the new
21st century radio astronomy paradigm

Proceedings of Symposium 7 of JENAM 2010

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2012, X, 118 p., Hardcover

ISBN: 978-3-642-22794-3