

Data Challenges of Next-Generation Radio Telescopes

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A new generation of radio telescopes is now under construction, including ASKAP (Australia), MeerKAT (South Africa), LOFAR (Netherlands), and others. All these telescopes are pioneering new techniques and exploring new ways of doing astronomy, in preparation for the planned Square Kilometre Array (SKA) to be built in the next decade. These so-called SKA Pathfinders are cutting-edge telescopes in their own right, exploring untrodden areas of observational phase space and exploring new ways of doing radio-astronomy. They promise a rich harvest of discoveries in the next few years, but also promise data volumes of many petabytes, and computational challenges to match. However, the greatest discoveries are potentially those which combine these enormous data sources in novel ways. In this talk I will review some of the successes and challenges of cutting-edge astronomy, and the processes that are being put into place to deal with the ever-growing challenge of handling these large amounts of data efficiently, and releasing the scientific discoveries buried within them.