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Time Series Analysis For the Multi-Wavelength Future

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Virtually all astronomical sources are variable on some time scale, making studies of variability across different wavelengths a major tool in pinning down the underlying physical processes, for example accretion onto compact objects and cataclysmic explosions like gamma-ray bursts. The new telescopes currently starting operations or coming online in the coming years, including the Square Kilometre Array (SKA) and the Cherenkov Telescope Array (CTA), will open up the sky to transient searches, monitoring campaigns and time series studies with an unprecedented coverage and resolution. But at the same time, they collect extraordinarily large data sets of previously unknown complexity, motivating the necessity for new tools and statistical methods. In this talk, I will review the state-of-the-art of astronomical time series analysis, and show possible future directions of research that will help us address the flood of multiwavelength time series data to come.

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