Special Guest Lectures

Towards Low-latency Real-time Detection of Gravitational Waves from Compact Binary Coalescences in the Era of Advanced Detectors

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Abstract:

We are expecting the first detection of gravitational waves (GWs) in the next decade. With the recent development of advanced detection technology, we will be able to provide early warnings of gravitational wave events to alert electromagnetic telescopes for prompt follow-up observations. I'll discuss the scientific motivation and current effort in this aspect. In particular, I will present a computationally efficient time-domain algorithm capable of detecting inspiral GWs with nearly no further delay in addition to the time required to condition the data into a time series of calibrated gravitational-wave strain. I'll discuss the status of its implementation in the current computational framework within the GW community and its acceleration using Graphics Processing Unit. At the end, I will discuss the implication of our effort to solve the computational challenges in the era of advanced GW detectors.

Speaker's Bio:

Linqing Wen is currently an ARC Future Fellow/Associate Professor, University of Western Australia. She was a Postdoc at Caltech and MPI/Albert Einstein Institute for Gravitational Physics. She received her PhD in Astrophysics from MIT in 2001. Her research interests include gravitational wave detection, GPU acceleration, X-ray astrophysics, and pulsar timing.

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