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Prospects for gravitational wave detection with pulsar timing arrays

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In the next decade the detection of gravitational waves (GW) will be a reality, opening a completely new window on the Universe. Massive black holes (MBH) binaries (MBHBs) are expected to be among the primary actors on this upcoming stage. Utilizing detailed MBHB population models (based on our current best understanding of galaxy formation and evolution through mergers, and on our knowledge of the relations between MBHs and their hosts), I describe prospects of detecting GWs with forthcoming pulsar timing arrays (PTAs). A strong GW background, detectable at a level of 10-100ns timing precision, is a robust prediction of all the models. I will also discuss the prospects of resolving individual binaries, along with the issues of parameter estimation and search of potential electromagnetic counterparts.

Primary author: Dr SESANA, alberto (Albert Einstein Institute, Golm)

Presenter: Dr SESANA, alberto (Albert Einstein Institute, Golm)

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