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Promise of persistent multi-messenger nano-hertz GW astronomy

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Supermassive Black Holes (SMBHs) thrive at the centres of massive galaxies and galaxy mergers can lead to SMBH binaries with orbital periods of years. Such systems emit nano-hertz gravitational waves (GWs) which can be detected by employing networks of precisely timed milli-second pulsars.
The rapidly maturing Pulsar Timing Arrays like NANOGrav, EPTA, InPTA, CPTA and PPTA, are expected to detect and characterise such GWs in the very near future under the auspices of the International Pulsar Timing Array (IPTA) consortium.
I will argue why this consortium has the potential to pursue persistent multi-messenger nano-hertz GW astronomy during the Square Kilometre Array era with a specific example.

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