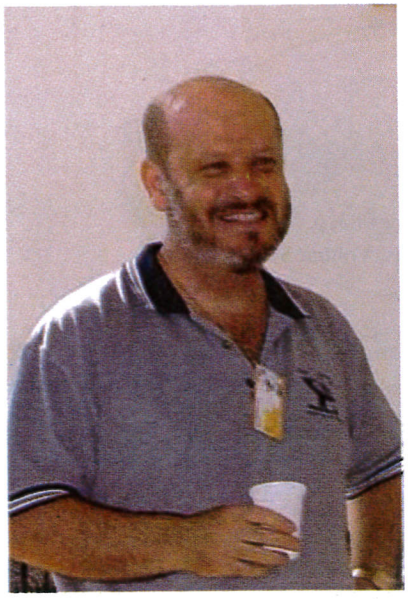
The Parkes Pulsar Timing Array (PPTA)



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Abstract. The detection and study of gravitational waves from astrophysical sources is a major goal of current astrophysics. Precise timing observations of a sample of millisecond pulsars widely distributed on the sky have the potential to detect gravitational waves at nanohertz frequencies. Potential sources of such waves include binary super-massive black holes in the cores of galaxies, relic radiation from the inflationary era and oscillations of cosmic strings. The Parkes Pulsar Timing Array (PPTA) is an implementation of such a system in which 20 millisecond pulsars have been observed using the Parkes radio telescope at three frequencies at intervals of two – three weeks for more than three years. To date, analysis of these data has been used to limit the gravitational wave background in our Galaxy and to constrain some models for its generation.