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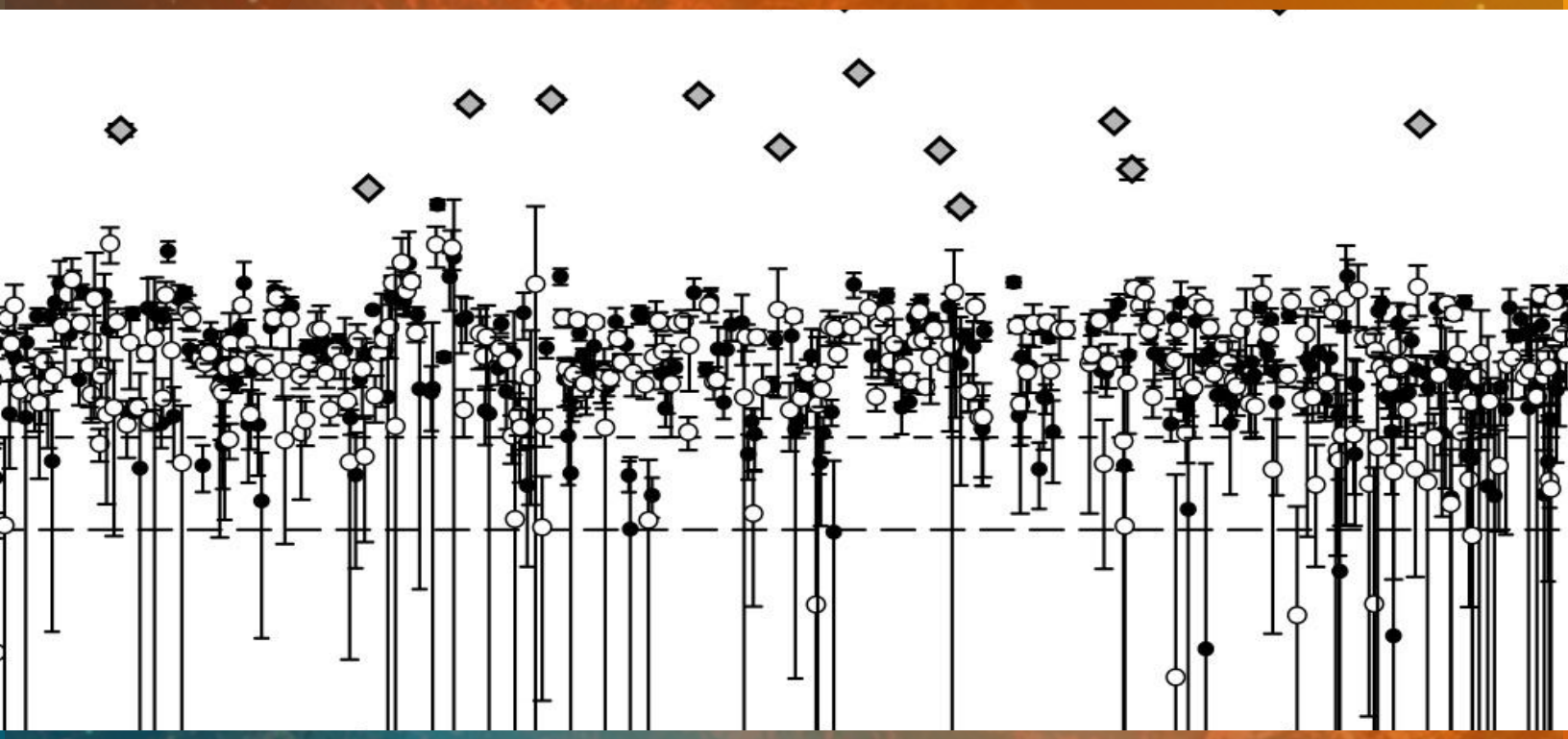

Scarcity of Small Glitches in the Crab and Vela Pulsars

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The rotation rates of most pulsars exhibit irregularities that are not well understood. Glitches are sudden increases of the rotation rate, believed to be driven by the neutron superfluid inside the star. The signatures of the largest events can easily be distinguished from timing noise, which is a continuous wandering of the rotational phase around the predictions of a simple rotational model. The origin of timing noise is less clear and a variety of processes are still being considered, such as magnetospheric fluctuations or superfluid turbulence. The population of small glitches is unconstrained because their detection is compromised by the presence of timing noise. In this talk I will describe our attempts to characterise timing noise as if it was made of many glitches and negative glitches (anti-glitches). Analyses for the Crab and Vela pulsars show that there is an under-abundance of small glitches, which appears genuine and not a result of observational biases. Besides typical glitches, the smooth spin down of these pulsars is also affected by an almost continuous activity that can be partially characterised by small step-like changes of both signs in the rotation rate. This behaviour is not predicted by some of the glitch models available, and these results provide constraints for the trigger mechanism of glitches.

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