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Glitches and anti-glitches in accreting pulsars: expected properties and observability

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Glitches have been observed in isolated pulsars, while a clear detection in accretion-powered X-ray pulsars is still lacking. We use the "snowplow" model for pulsar glitches of Pizzochero (2011) and starquake models to determine for the first time the expected properties of glitches in accreting pulsars. We also investigate the possibility that anti-glitches occur in accreting pulsars which show accretion-induced long-term spin-up. We find that glitches caused by quakes in a slow accreting neutron star are very rare and their detection extremely unlikely. On the contrary, glitches and anti-glitches caused by a transfer of angular momentum between the superfluid neutron vortices and the non-superfluid component may take place in accreting pulsars more often. We calculate the expected maximum jump in angular velocity of an anti-glitch and we also find that both glitches and anti-glitches in accreting pulsars are expected to have long rise and recovery time scales compared to isolated glitching pulsars. We find that, among accreting pulsars, GX 1+4 is the best candidate for the detection of glitches with currently operating X-ray satellites.

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