

# PHAROS Conference 2020: The multi-messenger physics and astrophysics of neutron stars



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## On the torque reversals of accreting neutron stars

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In continuation of our earlier work on the accretion/propeller transition of accreting neutron stars, we have investigated torque and luminosity variations during the spin-up/spin-down transitions of these systems. Our analytical model includes the critical conditions for transitions from the strong propeller to the weak propeller and to the spin-up phase together with the accompanying X-ray luminosities and rotational properties. We have compared our results to the observations of accreting neutron stars with different rotation rates, magnetic field strengths and accretion rates. In particular, we have shown that how these sources undergo torque reversals without a significant change in both the torque magnitudes and the X-ray luminosities.

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