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Gravitational wave signatures of axionic domain walls

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Axions are often accompanied by discrete symmetries that are spontaneously broken in the early universe and lead to the formation of a network of cosmic domain walls (DW).
In this talk, I will discuss the stochastic gravitational wave (GW) background produced by such networks. I will show that in some heavy QCD axion models, the GW signal is within reach of current and future detectors and is accompanied by a correction to the neutron (proton) electric dipole momentum that can be detected by future experiments.
I will also present a recent search for GWs from cosmic DWs in pulsar timing array data that shows that DWs can explain the signals that have been detected and lead to striking correlated signals at CMB and laboratory/collider experiments.

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