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# Bounds on Ultralight Dark Matter from NANOGrav

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The detection of the stochastic gravitational wave background by NANOGrav imposes constraints on the mass of compact cores of ultra-light dark matter, also known as "solitons", surrounding supermassive black holes found at the centers of large galaxies. The strong dynamical friction between the rotating black holes and the solitons competes with gravitational emission, resulting in a suppression of the characteristic strain in the nHz frequency range. Our findings robustly rule out ultralight dark matter particles with masses ranging from $1.3 \times 10^{-21}$eV to $1.4 \times 10^{-20}$eV condensing into solitons around supermassive black holes.

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