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Gravitational Waves from Superradiance Boson Clouds

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Black hole superradiance is a mechanism that allows a large cloud of ultralight bosons to grow around spinning black holes, simply through their gravitational interaction. The large amount of energy stored in these clouds is then typically dissipated through the emission of detectable monochromatic gravitational waves. I will focus on superradiance of vector fields that also couple electromagnetically, which results in very luminous boson clouds, emitting across the whole electromagnetic spectrum. The existence of these particles can therefore be revealed through unique multimessenger searches, targeting the combined electromagnetic and gravitational wave emissions.

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