

# New Atomic Probes for Dark Matter and Neutrino-Mediated Forces

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Low-mass bosonic dark matter particles produced after the Big Bang may form an oscillating classical field, which can be sought for in a variety of low-energy laboratory experiments based on spectroscopic, interferometric and magnetometric techniques, as well as in astrophysical phenomena. Dark bosons can also mediate anomalous fifth forces between ordinary-matter particles. Recent measurements in atoms and astrophysical phenomena have already allowed us to improve on existing constraints on a broad range of non-gravitational interactions between dark bosons and ordinary-matter particles by many orders of magnitude (up to 15 orders of magnitude in the case of low-mass dark matter). Additionally, existing atomic and nuclear spectroscopy data have allowed us to improve limits on long-range neutrino-mediated forces by 18 orders of magnitude.

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