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Non-integral-spin bosonic excitations in untextured magnets[1]
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Interactions are responsible for intriguing physics, e.g. emergence of exotic ground states and excitations, in a wide range of systems. Here we theoretically demonstrate that dipole-dipole interactions lead to bosonic eigen-excitations with spin ranging from zero to above $\hbar$ in magnets with uniformly magnetized ground states. These exotic excitations can be interpreted as quantum coherent conglomerates of magnons, the eigen-excitations when the dipolar interactions are disregarded. We further find that the eigenmodes in an easy-axis antiferromagnet are spin-zero quasiparticles instead of the widely believed spin $\pm\hbar$ magnons. The latter re-emerge when the symmetry is broken by a sufficiently large applied magnetic field. The spin greater than $\hbar$ is accompanied by vacuum fluctuations and may be considered a weak form of frustration.

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