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Boris Hanin* (bhanin@math.tamu.edu) and **Thomas Beck**. *Eigenvalue Spacings and Nodal Sets at Infinity for Radial Perturbations of the Harmonic Oscillator*.

We study properties of the nodal sets of high frequency eigenfunctions and quasimodes for radial perturbations of the Harmonic Oscillator. In particular, we consider nodal sets on spheres of large radius (in the classically forbidden region) for quasimodes with energies lying in intervals around a fixed energy E . For well chosen intervals we show that these nodal sets exhibit quantitatively different behavior compared to those of the unperturbed Harmonic Oscillator. These energy intervals are defined via a careful analysis of the eigenvalue spacings for the perturbed operator, based on analytic perturbation theory and linearization formulas for Laguerre polynomials. (Received July 28, 2017)