

Title: **Thresholding and Oracle Inequalities for Weighted χ^2**

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Given data from a spherical Gaussian distribution with unknown mean vector θ , estimates of quadratic functionals $\rho_\alpha = \sum \alpha_k \theta_k^2$ are constructed by thresholding. Mean squared error bounds are derived via a comparison with those already available for a suitable noncentral χ^2 variate. By way of illustration, the resulting oracle inequalities are used to yield an optimal rate adaptivity result for estimation of $\int (D^l f)^2$ in the white noise model of nonparametric function estimation.