

## **Random weighted projections, random quadratic forms and random eigenvectors**

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We start with a simple, yet useful, concentration inequality concerning random weighted projections in high dimensional spaces. The inequality is then used to prove a general concentration inequality for random quadratic forms. In another application, we show the optimal infinity norm  $O(\sqrt{(\log n)/n})$  for most unit eigenvectors of a large class of random matrices, including the adjacency matrix of random graphs. This is joint work with Van Vu.