Central limit theorem of random quadratics forms involving random matrices

Baiqi Miao, University of Science and Technology of China

Let random variables \(\{v_{ij}, i, j = 1, 2, \cdots, N\}\) be i.i.d. with \(\text{Ev}_{11}^{\frac{1}{2}} < \infty\) and define \(s_i = \frac{1}{\sqrt{N}}(v_{i,1}, \cdots, v_{i,N})^T\) and \(S = (s_1, s_2, \cdots, s_K)\). The central limit theorem of the random quadratic forms \(s_i^T(S^TS_i)\) is established, which comes from the application to wireless communication. In addition, a multidimensional central limit theorem of its is established as well.