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NULL DISTRIBUTION OF THE SUM OF SQUARED z-TRANSFORMS IN TESTING COMPLETE INDEPENDENCE

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Abstract. Brien *et al.* (1984, *Biometrika*, **71**, 545–554; 1988, *Biometrika*, **75**, 469–476) have proposed, illustrated and discussed advantages of using Fisher's z-transforms for analyzing correlation structures of multinormal data. Chen and Mudholkar (1988, *Austral. J. Statist.*, **31**, 105–110) have studied the sum of squared z-transforms of sample correlations as a test statistic for complete independence. In this paper Brown's (1987, *Ann. Probab.*, **15**, 416–422) graph-theoretic characterization of the dependence structure of sample correlations is used to evaluate moments of the test statistic. These moments are then used to approximate its null distribution accurately over a broad range of parameters, including the case where the population dimension exceeds the sample size.

Key words and phrases: Approximation, correlation analysis, dependence among sample correlations.