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Type-II matrices

An $n \times n$ complex matrix W is a *type-II* matrix if, for $i, j = 1, \dots, n$,

$$\sum_{k=1}^n \frac{W_{ik}}{W_{jk}} = n\delta_{ij}.$$

Important examples of type-II matrices include spin models and complex Hadamard matrices. From each type-II matrix, Nomura's construction gives a formally dual pair of association schemes. This talk gives a brief overview of the rich theory of type-II matrices with connections to association schemes, spin models, and some recent work on quantum symmetry of graphs.