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A family of regular weights on the folded Johnson scheme $J(2n,n)$

The Odd graph is a distance-regular graph that generates the Johnson $J(2m+1,m)$ association scheme. Its vertices are the m -subsets of a $(2m+1)$ -set, and are adjacent if and only if disjoint. It is well known that the union of this graph and its distance 2 graph is isomorphic to a folded Johnson graph. In this talk we describe how the union of graphs extends to a fusion of the full association scheme. Using the fusion, we define a certain edge weight on the folded graph and obtain the scheme $J(2m+2,m+1)$ as a double *covering configuration* of the folded graph.

This family of examples illustrates two concepts that we shall attempt to convince the audience are interesting: Firstly, an infinite family of regular weights with so-called *minimal closure*; secondly the explicit covering schemes derived from these weights that coincide with the well known double covers of folded distance-regular graphs.

If time permits, we will show that the Hamming scheme $H(n-1,2)$ lends itself to a similar construction involving the folded n -cube.