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jianmin Ma* (jianmin.ma@emory.edu), Oxford College, Oxford, GA 30054. *On decomposition of a complete graph into Latin square graphs.*

A connected regular graph on n^2 vertices with eigenvalues $(n-1)g, n-g, -g$ is called a Latin square graph. If the edges of a complete graph can be decomposed a set of Latin square graphs, these graphs have an wonderful property: the union of each subset gives rise to a Latin square graph. In fact, this decomposition gives an amorphous symmetric association scheme. In this talk, we allow some of basis graphs in an amorphous scheme to be digraphs. We will use matrix techniques to show the nonexistence of certain amorphous schemes and give some constructions. (Received February 14, 2010)