1139-05-635 **William J. Martin*** (martin@wpi.edu), Department of Mathematical Sciences, 100 Institute Road, Worcester, MA 01609. *Scaffolds.* Preliminary report.

Star-triangle diagrams are a useful but poorly understood tool in the theory of association schemes. Similar ideas have been used to rule out distance-regular graphs using different language. Meanwhile the same object is encoded in the partition function of link diagrams in the development of spin models.

Let X be a nonempty finite set and let $\mathbb{A}$ be a vector subspace of $\mathsf{Mat}_X(\mathbb{C})$. Consider a digraph $G = (V(G), E(G))$ with edge weight function $w : E(G) \to \mathbb{A}$ and a set $R \subseteq V(G)$ of distinguished nodes. For $|R| = m$, the *scaffold* $\mathsf{S}(G; w, R)$ is then defined as the m^{th} order tensor

$$\mathsf{S}(G; R, w) = \sum_{\varphi: V(G) \to X} \left(\prod_{\substack{e \in E(G) \\ e=(a,b)}} w(e)_{\varphi(a),\varphi(b)} \right) \bigotimes_{r \in R} \widehat{\varphi(r)}$$

where $\hat{x}$ is the standard basis vector in $\mathbb{C}^X$ indexed by $x \in X$.

The aim of this talk is to outline a basic theory of scaffolds in the case where $\mathbb{A}$ is the Bose-Mesner algebra of some association scheme. Topics to be discussed include spin models for link invariants, triple intersection numbers for distance-regular graphs and structure theorems for Q-polynomial association schemes. (Received February 20, 2018)