RAAGs in knot groups

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The right-angled Artin group (RAAG) associated to a finite simplicial graph Γ is a group given by the following presentation:

$$A(\Gamma) = \langle\ v_1, \ldots, v_n\ \mid\ [v_i, v_j] = 1 \text{ if } \{v_i, v_j\} \in\ E(\Gamma)\ \rangle.$$

Here, $\{v_1, \ldots, v_n\}$ is the vertex set of Γ and $E(\Gamma)$ is the edge set of Γ. In 2003, Crisp-Wiest considered embeddings from surface groups to RAAGs and proved that most surface groups can be embedded in RAAGs. Recently, Agol, Liu, Przytycki, Wise et al. considered "virtual" embeddings from the fundamental groups of compact aspherical 3-manifolds to RAAGs and obtained deep theorems such as Virtual Haken Conjecture for 3-manifolds. In this talk, we consider embeddings from RAAGs to knot groups, and we give a complete classification of RAAGs which admit embeddings into the knot group of K for each knot K in S^3, by means of the torus decomposition in the sense of Jaco-Shalen and Johannson.