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Zsuzsanna Dancso, Iva Halacheva* (i.halacheva@northeastern.edu) and **Marcy Robertson.** *Pivotal categories, tangles, and the Kashiwara-Vergne groups.*

The structure of topological tangles was captured by Jones's theory of planar algebras. For the higher dimensional family of welded tangles (knotted tubes in 4-space), Bar-Natan proposed the notion of circuit algebras, dropping the planarity condition on the connection diagrams. In joint work with Dancso and Robertson, we show that circuit algebras are equivalent to a type of pivotal categories known in homotopy theory as wheeled props. Moreover, we show that the automorphisms of welded foams, a further generalization of tangles, thought of as a circuit algebra recover the Kashiwara-Vergne group in Lie theory. I will explain some of the ideas behind and applications of these constructions. (Received August 30, 2021)