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Using Algebraic Space Curves to Investigate Magnetic Helicity and Its Application to the Spheromak R. E. WILLIAMS, R. L. WILLIAMS, Florida A. M. University — The goal of this research is to study magnetic helicity and the topology of magnetic flux tubes using the homotopy groups of braids, knots, links and tangles. Flux tubes are represented as real algebraic curves in three dimensional space. We are interested in developing a stochastic, dynamic group of curves representing knotted, braided, and tangled flux tubes that evolve around and converge onto a torus. The group will be modeled using a computer algebra system. Using our model, we propose to define helicity, writhe and linking number parameters to analyze their relation to the time for magnetic relaxation and confinement.

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