Genons, twist defects, and projective non-Abelian statistics
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An intense focus in the condensed matter community currently is the search for Majorana fermions in solid state systems. Defects which localize Majorana zero modes obey the simplest kind of non-Abelian statistics, and are of interest partially for the goal of achieving topological quantum computing. In this talk, I will present recent advances in our understanding of how to synthesize a much more general class of non-abelian defects using conventional topological states. After discussing the new theoretical foundations, I will present an experimental proposal using only conventional bilayer fractional quantum Hall states and a simple geometry of top and bottom gates. I will also discuss how these ideas can be used to perform universal topological quantum computing (TQC) using non-abelian states that by themselves are not universal for TQC.