Configuration space topology as cause or signature of slow dynamics

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The idea that the configuration space of disordered systems breaks into disconnected components, separated by energy barriers that scale with system size, is a familiar picture of how a glass becomes dynamically arrested. Is this clustering preceded by sharp transitions in higher dimensional topological invariants? I will show some results from computational topology on the configuration space of the perceptron, a model recently shown to be in the same universality class as the hard-sphere glass, and discuss their implications and questions they raise.