Laura Anderson (Binghamton)

All Roads Lead to the Euler Characteristic

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Euler's theorem on cell decompositions of 2-spheres (the number of vertices, minus the number of edges, plus the number of faces, equals two) is sometimes billed as the starting point for all of topology. But in fact, the Euler characteristic can be taken as the starting point for a number of fields. It fits just as naturally as a cornerstone for Möbius functions of partially ordered sets (itself the endpoint of a great many roads) and for valuations (a notion closely related to measure). This talk will survey these various roles for the Euler characteristic, based on work by Hall, Hadwiger, and Klee.

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