Complex-valued harmonic mappings and minimal surfaces

Presented by:
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Complex-valued harmonic mappings can be regarded as generalizations of analytic functions familiar from an undergraduate complex variables course. During this talk, we will begin with a Steiner problem (what is the shortest path between several points?) and then transform it up one dimension to minimal surfaces. We will discuss some differential geometry background for minimal surfaces, diverge into complex-valued harmonic mappings, and discuss the connection between minimal surfaces and complex-valued harmonic mappings. Current research uses convex combinations of complex-valued harmonic mappings to construct harmonic mappings onto nonconvex polygonal domains and to construct the corresponding minimal graphs over these domains. This results in a new way to construct the family of Jenkins-Serrin minimal surfaces.

Light refreshment will be served.