1163-51-1471 **Eric Geiger*** (edgeiger@ncsu.edu) and **Irina A. Kogan** (iakogan@ncsu.edu). *Non-congruent curves with identical signatures.* Preliminary report.

This talk will focus on using the Euclidean Signature to determine whether two smooth planar curves are congruent under the Special Euclidean group. Work done by Emilio Musso and Lorenzo Nicolodi emphasize that signatures must be used with caution by constructing 1-parameter families of non-congruent curves with degenerate vertices (curve segments of constant curvature) with identical signatures. We address the claim made by Mark Hickman, that the Euclidean Signature uniquely identifies curves without degenerate vertices. While the claim is true for simple, closed curves with simple signatures, it fails for curves with non-simple signatures. For curves with non-simple signatures, we associate a directed graph (a signature quiver) with the signature and show how various paths along the quiver give rise to a family of non-congruent, non-degenerate curves with identical Euclidean Signatures. Using this additional structure, we formulate congruence criteria for non-degenerate, closed, simple planar curves. (Received September 15, 2020)