1086-52-2857 **John Chiarelli** (jlc625@nyu.edu), **Robert Connelly** (rc46@cornell.edu) and **Lisa Piccirillo*** (piccirli@bc.edu). *On Unit Triangle and Square Tilings in* $\mathbb{R}^2$.

The tiling completion problem (Goodman-Strauss, 2000) questions the decideability the following: Given some proset of tiles, does some edge to edge combination of them tile a given boundary?

We prove that in $\mathbb{R}^2$ for oriented unit triangle and square tiles the problem is decideable, and give necessary and sufficient criteria.

For unoriented unit triangle and square tiles, we prove this problem is decideable for a convex boundary in $\mathbb{R}^2$and give criteria. Additionally we provide an invariant for determining the canonical proset of unoriented tiles for any tileable boundary (Received September 25, 2012)