1057-30-71 **Pietro Poggi-Corradini***, Department of Mathematics, Cardwell Hall, Kansas State University, Manhattan, KS 66506. *Evolution of analytic Jordan curves under conformal maps of an annulus.* Preliminary report.

Let f be an analytic map near 0 with $f(0) = 0$ and $f'(0) \neq 0$. For r fixed (small) $f(re^{i\theta})$ describes an analytic Jordan curve $J(r)$, and hence defines an inner domain G_1 and an outer domain G_2. Let $M_1(r)$ be the reduced modulus of $J(r)$ with respect to 0 in G_1, and let $M_2(r)$ the reduced modulus of $J(r)$ with respect to ∞ in G_2. Then $M_1(r) + M_2(r) \leq 0$ with equality if and only if $J(r)$ is a circle centered at 0. Teichmü ller's famous *Modulsatz* states that if $M_1 + M_2$ is close to 0, then J is closed to being a circle (geometrically). So the quantity $M_1 + M_2$ can be thought as a measure of how far J is from being a circle. In previous work we showed that $|M_1(r) + M_2(r)|$ is monotonically increasing with r. Inspired by the recent breakthrough of Iwaniec, Kovalev, and Onninen on the Nitsche conjecture, we have extended our result to conformal mappings defined on an annulus $\{1 < |z| < R\}$ such that $|f(z)| = 1$ for $|z| = 1$. We will finish the talk with some open problems related to the work of Pólya and Szegő. (Received January 04, 2010)