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**Tadeusz Iwaniec, Leonid V. Kovalev\*** (lvkovale@syr.edu) and **Jani Onninen**. *The Nitsche conjecture*.

In 1962 J.C.C. Nitsche raised the question of the existence of a harmonic homeomorphism between circular annuli  $\{z \in \mathbb{C}: r < |z| < R\}$  and  $\{z \in \mathbb{C}: r^* < |z| < R^*\}$ . He conjectured that such a mapping exists if and only if  $R^*/r^* \geq (R/r + r/R)/2$ . I will sketch the proof of this conjecture and discuss related open problems. (Received August 16, 2009)