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 C^∞ spectral rigidity of ellipses. Preliminary report.

We prove that if

$$\Omega_t$$

is a smooth curve of isospectral $Z_2 \times Z_2$ symmetric C^∞ domains with Ω_0 an ellipse, then the deformation is trivial.

That is, a smooth deformation of the ellipse through smooth domains with the symmetry of the ellipse cannot be isospectral.

The best previous result was that the ellipse is spectrally rigid among analytic domains. The contribution of this talk is to remove the analyticity assumption. (Received April 10, 2010)