



## Einladung zum Oberseminar Mathematik in den Naturwissenschaften

Julius-Maximilians-Universität Würzburg  
Lehrstuhl für Mathematik in den Naturwissenschaften

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### Willmore Stability of Minimal Surfaces in Round Spheres

We show that the Lawson minimal surface  $\xi_{g,1} \subset S^3$  of genus  $g$  is strongly  $W$ -stable in  $S^n$  for every  $n \geq 4$ , and thus a local minimizer for the bending energy

$$W(M) := \text{area}(M) + \int_M H^2 = \int_M (1 + H^2),$$

providing more evidence for the conjecture that it is the unique (up to Möbius transformations)  $W$ -minimizer among all compact surfaces of that genus in round spheres.

Our argument uses S. Y. Cheng's extension of the Courant nodal domain theory applied to the polar surface of  $\xi_{g,1}$ , combined with the recent theorem of Kapouleas and Wiygul that the area-index of  $\xi_{g,1}$  is  $2g + 3$ , to confirm that its Jacobi operator has the critical spectral gap.

Also (and years earlier), we were surprised to discover that although the equilateral minimal torus in  $S^5$  also has this critical spectral gap and therefore is  $W$ -stable, it is not a local  $W$ -minimizer.

[This is joint work with Peng Wang at FJNU.]

Please also see the survey article: <https://legacy.slmath.org/system/cms/files/204/files/original/Emissary-2016-Spring-Web.pdf>.

Ort: Mathematik Ost, 40.02.007

Zeit: Mittwoch, 17.06.2026 um 14:00 Uhr

**You are cordially invited to this lecture. Request the Zoom link from [anja.schloerkemper@uni-wuerzburg.de](mailto:anja.schloerkemper@uni-wuerzburg.de)**

gez. Anja Schlömerkemper