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Continuum-wise hyperbolicity is exactly the pseudo-Anosov dynamics with spine singularities

We establish a complete structural classification for continuum-wise hyperbolic surface homeomorphisms. Specifically, we prove that a surface homeomorphism is cw_F-hyperbolic if, and only if, it is a pseudo-Anosov homeomorphism whose singularities consist exclusively of spines (1-prongs). Furthermore, we classify these systems up to topological conjugacy, showing that every such homeomorphism is conjugate to either an Anosov automorphism on the torus $\mathbb{T}^2$ or to its standard hyperelliptic quotient on the sphere $\mathbb{S}^2$. As a rigid consequence of this classification, we show that such dynamics are strictly obstructed on surfaces of genus greater than one, the Klein bottle, and the projective plane.

1 Rodrigo Arruda, Bernardo Carvalho, Alberto Sarmiento. Continuum-wise hyperbolic homeomorphisms on surfaces. Discrete and Continuous Dynamical Systems, 2024, 44(3): 768-790. doi: 10.3934/dcds.2023125

2 Rodrigo Arruda, Bernardo Carvalho, Piotr Oprocha, Alberto Sarmiento. Continuum-wise hyperbolicity is exactly the pseudo-Anosov dynamics with spine singularities. To appear on arxiv.