

Aria

W H I T N E Y ' S U M B R E L L A

DAVID DARLING ON WHITNEY'S UMBRELLA

Whitney's Umbrella is a strange-looking, whimsically named geometrical object first studied by Hassler Whitney in 1940s. It can be pictured as a self-intersecting rectangle in three dimensions. A *pinch point*, also known as a *Whitney singularity* or a *branch point* occurs at the top endpoint of the segment of self-intersection: every neighborhood of the pinch point intersects itself.

Whitney's Umbrella

A surface which can be interpreted as a self-intersecting rectangle in three dimensions. The Whitney umbrella is the only stable singularity of mappings from \mathbb{R}^2 to \mathbb{R}^3 . It is given by the parametric equations

$$\begin{aligned}x &= uv \\y &= u \\z &= v^2\end{aligned}$$

STRIP OF THE WEEK: UMBRELLA ROTATES

