

The Endraß Octic

In 1995, Stephan Endraß constructed this surface of degree 8 (octic) as the main result of his dissertation at Erlangen University. Altogether, it has 168 singularities which is still the current world record.

Via a general result by Varchenko one knows that an octic cannot have more than 174 singular points. Thus:

$168 \leq \mu(8) \leq 174$. The exact number is not known.

Finding the surface was not easy: Endraß had to search for it in a 5-dimensional family of octics where the general member of the family only has 112 singularities.

In the interactive picture the symmetry of the construction is apparent: In addition to the symmetry of a regular octagon the surface is symmetric with respect to the xy plane.

Without using such symmetries the search space would have been of even higher dimension.