

András Szűcs: Three Fields medalists of Topology: Thom, Smale, Milnor

We wish to highlight some key steps from the development of modern topology. We explain some contributions of Thom regarding the cobordisms of manifolds via the following steps: rotation of vector fields, degree, Pontrjagin and Thom construction, hedgehog theorem, belt trick, Poincaré-Hopf theorem. From the work of Smale we focus on immersion theory starting from some motivating examples (e.g. the immersions of the circle in the plane). Finally we mention some signature formulae, which help the detection of exotic structures on the spheres, done by Milnor. Realizations by Brieskorn algebraic equations will also be mentioned.

Useful readings:

Milnor-Stasheff: Characteristic classes

Hatcher: Algebraic topology

Hirsch: Differential Topology