WARSAW UNIVERSITY OF TECHNOLOGY
DEVELOPMENT PROGRAMME

Lectures on

Surfaces in Euclidean spaces from the singularity theory viewpoint

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Abstract

Singularity theory is concerned with the topology and the geometry of spaces and mappings that are not regular.

The methods of singularity theory have been successfully applied to study extrinsic differential geometry of submanifolds in Euclidean spaces. The idea is to define some natural families of functions or maps on the submanifold and investigate the singularities of such maps. The singularities give information on the contacts of the submanifold with some *model objects*, which in turn, can be measured in terms of geometrical invariants.

In this series of lectures we review classical results on singularity theory and show how to apply methods of this theory to study geometric properties of surfaces in Euclidean spaces.

The topics will include:

- Basic introduction to singularity theory;
- Contact between manifolds;
- Surfaces in 3 and 4 dimensional spaces;
- Surfaces in higher dimensional spaces. Open problems.

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