WARSAW UNIVERSITY OF TECHNOLOGY
DEVELOPMENT PROGRAMME

Lecture IV

Surfaces in Euclidean spaces. The higher codimensional cases.

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In this lecture we study surfaces in 5-spaces based on recent results of M.C.Romero-Fuster, M.A.S.Ruas, D. Mochida, S. Moraes and F.Tari. We also discuss the higher codimensional case based on results of S. Costa, S. Moraes and M.C. Romero-Fuster.

The motivation for studying surfaces in the Euclidean space $\mathbb{R}^5$ is the problem of the existence of k- th-regular immersion of a submanifold M in Euclidean spaces. This question was introduced independently by E. A. Feldman and W. Pohl. The cases $n = 3, 4$ and $n > 7$ are already studied. The case $n = 5$ appears to be more complicated and few results are known in this direction so far.

The following topics will be discussed:

- The second fundamental form of surfaces in $\mathbb{R}^n$, $n \geq 5$;
- Asymptotic curves on generically immersed surfaces in $\mathbb{R}^5$;
- Lines of curvature of surfaces in 5-space;
- Final comments.

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NATIONAL COHESION STRATEGY
EUROPEAN UNION
EUROPEAN
SOCIAL FUND
Lectures co-financed by the European Union in scope of the European Social Fund