

MATEMATIČNI KOLOKVIJI

Za razumevanje predavanj je dobrodošlo znanje diplomiranega matematika ali študenta višjih letnikov matematike.

VABILO

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Fakultete za matematiko in fiziko Univerze v Ljubljani

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predaval:

Prof. dr. FRIEDRICH HEGENBARTH

UNIVERSITÀ DEGLI STUDI DI MILANO (ITALIJA)

Generalized manifolds – Some aspects

The notion of *generalized manifolds* (g.m.'s) has passed through various stages. The most common contemporary definition is characterized by two properties: (i) every g.m. X is an ENR-space and (ii) every g.m. X has the same local homology groups as the Euclidean n -space \mathbb{R}^n , where n is the dimension of X .

One advantage of these two properties is that the *Poincaré duality* can be expressed in terms of the singular (co-)homology instead of the more complicated sheaf-theoretical setting. Moreover, X has the homotopy type of a *Poincaré duality complex* in the sense of Wall (as follows from the classical *Borsuk Conjecture*, proved by West).

A milestone in the development of the theory of g.m.'s was the Edwards *DDP Theorem* which states that if a g.m. X^n of dimension ≥ 4 admits a *resolution* and satisfies the *disjoint disk property* (DDP) then X is homeomorphic to a topological n -manifold.

To construct *resolutions*, i.e. *cell-like* maps $f : M^n \rightarrow X^n$, where M is an n -manifold, Quinn invented *controlled surgery* techniques. Surprisingly, there is an integer obstruction $i(X)$ for the existence of a resolution. This integer $i(X)$ is part of a *surgery obstruction*, and the Wall-realization of such obstructions were used by Bryant-Ferry-Mio-Weinberger to systematically construct g.m.'s.

A striking property of $i(X)$ is its *local character*: If U is an open subset of X , then $i(U) = i(X)$. This might not hold for earlier notions of g.m.'s. Other properties of the invariant $i(X)$ will be discussed in the lecture, following the presentation in our new monograph A. Cavicchioli, F. Hegenbarth and D. Repovš, *Higher-Dimensional Generalized Manifolds: Surgery and Constructions*, European Mathematical Society, Zurich, 2016.

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Ljubitelji matematike vljudno vabljeni!

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Priporobe podajte na naslov: primoz.moravec@fmf.uni-lj.si