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Topology of manifolds

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We present selected results from the work in the topology group at KAG FMFI UK supported by the grant VEGA 1/0425/25. The main focus is on the results of the PhD student Ajay Raj, who defended his thesis in August 2025. His work is located in surgery theory which is a specific way of approaching classification problems of topological and smooth manifolds. His aim was to calculate the so-called surgery structure sets of manifolds which are total spaces of S^{4k-1}-bundles over S^{4k}. The topological structure set classifies topological manifolds equipped with homotopy equivalences to the total space of the bundle up to homeomorphism. The smooth structure set does the same for smooth manifolds up to diffeomorphism. The objective was to calculate the topological structure set and determine which of the elements in it can be realized as such bundles. Furthermore, the forgetful map between smooth and topological versions of structure set was completely determined. We briefly mention other work in the group, some of which will also be presented in other posters.

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