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Section:

6. Topology

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Thomas, Charles B., University of Cambridge (GB):

Contact structure and spherical space forms

A free orthogonal action by the finite group G on an odd-dimensional sphere S^{2n+1} is compatible with the standard (regular) contact form. Two questions arise: (1) under what conditions does an arbitrary smooth spherical space form admit a contact form, and (2) what are the restrictions on a non-orthogonal free action by G for it to be compatible with the standard form? Results obtained so far suggest that answering the first question leads to new examples of 'exotic' contact forms on the sphere. In the second case contact-compatible representations of G are shown to be closer to representations in SO_{2n+2} than to representations in $\mathrm{Diff}^+(S^{2n+1})$. There are pretty examples in dimensions 5 and 7.