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The rational classification of (n-1)-connected (4n-1)-manifolds (n > 1)

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I shall report on joint work with Johannes Nordström in which we identify a new invariant of the rational homotopy type of a space X, which we call the Bianchi-Massey tensor.

The Bianchi-Massey tensor is a linear map on the degree (4n-1) rational cohomology of X taking values in a subspace of the 4-fold tensor product of the degree n cohomology of X.

We use the Bianchi-Massey tensor to show that there are many (n-1)-connected (4n-1)-manifolds which are not formal but which have no non-zero Massey products, and to present a classification of simply-connected 7-manifolds up to finite ambiguity.

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