Definite manifolds bounded by rational homology 3-spheres

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The basic question we address is whether a given definite form may be the intersection pairing of a smooth four-manifold bounded by a given rational homology sphere. We survey various obstructions including linking pairings, rho invariants and the more recent Floer homology invariants of Frøyshov and Ozsváth and Szabó. We describe various examples and compute the four ball genus of some families of knots and links.

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