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Construction of G_2 -instantons via twisted connected sums

We propose a method to construct G_2 -instantons over a compact twisted connected sum G_2 -manifold, applying a previous gluing theorem to instantons over a pair of 7-manifolds with a tubular end. In our example, the moduli spaces of the ingredient instantons are non-trivial, and their images in the moduli space over the asymptotic cross-section K3 surface intersect transversely. Such a pair of asymptotically stable holomorphic bundles is obtained using a twisted version of the Hartshorne-Serre construction, which can be used to produce many more examples. Moreover, their deformation theory and asymptotic behaviour are explicitly understood, results which may be of independent interest. This is joint work with G. Menet and J. Nordström, and it builds on previous works with T. Walpuski and also M. Jardim, G. Menet and D. Prata.