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Marianty Ionel* (mionel@utnet.utoledo.edu), University of Toledo, Toledo, OH. *Some results on 4 dimensional austere submanifolds.* Preliminary report.

An austere submanifold has the algebraic property that its second fundamental form in any normal direction has its eigenvalues appearing in oppositely signed pairs. The class of austere submanifolds was first introduced by Harvey and Lawson in 1982. The main motivation was their result showing that the conormal bundle of an austere submanifold in R^n is a special Lagrangian submanifold of R^{2n} . The austere submanifolds of dimension 3 in Euclidean space were classified by R. Bryant. In this talk I will present some results on austere submanifolds of dimension 4 in Euclidean space. Depending on the type of the second fundamental form, we get both non-existence results as well as new descriptions of austere submanifolds. This is joint work with Thomas Ivey. (Received August 25, 2008)