

Classification of symmetric M-theory backgrounds

Figueroa O'Farrill

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Email:

We classify symmetric backgrounds of eleven-dimensional supergravity up to local isometry. In other words, we classify triples (M, g, F) , where (M, g) is an eleven-dimensional lorentzian locally symmetric space and F is an invariant 4-form, satisfying the equations of motion of eleven-dimensional supergravity. The possible (M, g) are given either by (not necessarily nondegenerate) Cahen–Wallach spaces or by products $AdS_d \times M^{11-d}$ for $d = 2, \dots, 7$ and M^{11-d} a not necessarily irreducible riemannian symmetric space. For each such geometry we determine the possible F s. The backgrounds are grouped in families sharing the same F-moduli space, which we determine completely in most cases.