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**Luis Alberto Wills Toro\*** (lwills@aus.edu), AUS Dept. Math. P.O. Box 26666, Sharjah, United Arab Emirates, and **Luis A. Sanchez** and **A. Abdurrahman**. *Graded Lie algebras combining space-time with internal and super-symmetries.*

We present novel extensions of the symmetries of Special Relativity. They are analogues to supersymmetry: They are  $Z_4 \times Z_4$ -graded extensions of the Poincaré algebra. The iterated Lie product of novel translations (of dimension 1/3) in three different Minkowski-space-like replicas produces a space-time translation. They are graded Lie algebras whose radical is nilpotent. This allows for adopting nilpotent features in some transformation parameters. Additionally, nonabelian gauge symmetries can be non-trivially entangled with such extensions. We have found an extra  $su(2)$  or an  $su(3)$  symmetry that casts a continuous transformations between the diverse Minkowski-space-like replicas. Some recent advances in obtaining also a supersymmetric extensions of such novel symmetries is reported. (Received February 18, 2008)