

New rules for octonionic triplet and quadruplet multiplications and applications in high energy physics

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The highest known division algebra with quadratic norm property is that of octonions in 8 dimensions. Multiplication rules for doublets of octonions are well known in literature. We've produced a dual to those rules, that of octonionic triplet and quadruplet multiplications and show they are all part of a larger mathematical group. Rules we introduce map octonions with all sorts of geometries (such as Pappus', Desargues', Monge's and Ceva's theorems, etc., together) and further map these geometries into each other. We also give examples of mappings of 4 circles and their boundaries into full octonionic intersecting lines unknown in mathematical literature. Applications into preons and quarks as well as into dynamical supersymmetry will be shown, the only supersymmetry with relevance so far in high energy physics.