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Scaling dimensions of fixed charge operators

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I will start with a brief pedagogic review of the semiclassical method for determining the scaling dimensions of fixed-charge operators in conformal field theory with global symmetries and then introduce a general strategy to determine the relation between a given charge configuration and the associated operators for a given global symmetry group. I will demonstrate how, by varying the charge configuration, it is possible to access anomalous dimensions of different operators transforming according to a variety of irreducible representations of the given non-abelian symmetry group without the aid of diagrammatical computations. I will illustrate the computational strategy by determining the anomalous dimensions of several composite operators to the NLO in the semiclassical expansion for the O(N) and U(M)xU(N) models. Connections to the scattering amplitudes involving many W, Z and Higgs bosons in the Standard Model at energies that may be approachable at the next generation of colliders and Higgsplosion program will be briefly discussed.

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