Title: BMS4 Algebra, its Stability and Deformation

Abstract:
We study rigidity and stability of the BMS4 algebra and its centrally extended version. We construct and classify the family of algebras which appear as deformations of BMS4 and in general find the four-parameter family of algebras W(a,b;a',b') as a result of the stabilization analysis, where BMS4 =W(-1/2,-1/2;-1/2,-1/2). We then study the W(a,b;a',b') algebra and show that the W(a,b;a',b') family of algebras for generic values of the parameters is stable. For special cases of (a,b)=(a',b')=(0,0) and (a,b)=(0,-1), (a',b')=(0,0) the algebra can be deformed. In particular we show that centrally extended W(0,-1;0,0) algebra can be deformed to an algebra which has three copies of Virasoro as a subalgebra. We briefly discuss these deformed algebras as asymptotic symmetry algebras and the physical meaning of the stabilization and implications of our result.