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Near-Extremal Kerr $AdS_2 \times S^2$ Solution and Black-Hole/Near-Horizion-CFT Duality ANANDA GUNERATNE, LEO RODRIGUEZ, SUJEEV WICKRAMASEKARA, Grinnell College, TUNA YILDIRIM, University of Iowa — We study the thermodynamics of the near horizon of near extremal Kerr geometry ($near - NHEK$) within an AdS_2/CFT_1 correspondence. We do this by shifting the horizon by a general finite mass, which does not alter the geometry and the resulting solution is still diffeomorphic to $NHEK$, however it allows for a Robertson Wilczek two dimensional Kaluza-Klein reduction and the introduction of a finite regulator on the AdS_2 boundary. The resulting asymptotic symmetry group of the two dimensional Kaluza-Klein reduction leads to a non-vanishing quantum conformal field theory (CFT) on the respective AdS_2 boundary. The s-wave contribution of the energy-momentum-tensor of the CFT, together with the asymptotic symmetries, generate a Virasoro algebra with calculable center and non-vanishing lowest Virasoro eigen-mode. The central charge and lowest eigen-mode reproduce the $near - NHEK$ Bekenstein-Hawking entropy via the statistical Cardy Formula and our derived central charge agrees with the standard Kerr/CFT Correspondence. We also compute the Hawking temperature of the shifted $near - NHEK$ by analyzing quantum holomorphic fluxes of the Robinson and Wilczek two dimensional analogue fields.

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