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Workshop or Conference

Jeudi 24 Août 2017, 11 :00
LPTENS, Room Conf. IV(LPTENS Summer Institute https ://indico.in2p3.fr/event/14720/)
Domaines : hep-th

Titre : *Supercurrent anomalies in 4d SCFTs*

Orateur : **Ioannis Papadimitriou (INFN-Trieste & SISSA-Trieste)**

Résumé : *We use holographic renormalization of minimal N=2 gauged supergravity in order to derive the general form of the quantum Ward identities for 3d N=2 and 4d N=1 superconformal theories on general curved backgrounds, including an arbitrary fermionic source for the supercurrent. The Ward identities for 4d N=1 theories contain both bosonic and fermionic global anomalies, which we determine explicitly up to quadratic order in the supercurrent source. The Ward identities we derive apply to any superconformal theory, independently of whether it admits a holographic dual, except for the specific values of the a and c anomaly coefficients, which are equal due to our starting point of a two-derivative bulk supergravity theory. We show that the fermionic anomalies lead to an anomalous transformation of the supercurrent under rigid supersymmetry on backgrounds admitting Killing spinors, even if all superconformal anomalies are numerically zero on such backgrounds. The anomalous transformation of the supercurrent under rigid supersymmetry leads to an obstruction to the Q-exactness of the stress tensor in supersymmetric vacua, and may have implications for the applicability of localization techniques. We use this obstruction to the Q- exactness of the stress tensor, together with the Ward identities, in order to determine the general form of the stress tensor and R-current one-point functions in supersymmetric vacua, which allows us to obtain general expressions for the supersymmetric Casimir charges and partition function. The talk is based on arXiv :1703.04299.*