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Abstract for an Invited Paper  
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### **Kondo Breakdown and Quantum Oscillations in SmB<sub>6</sub><sup>1</sup>**

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Motivated by the observation of light surface states of SmB<sub>6</sub>, I will discuss the effects of surface Kondo breakdown in topological Kondo insulators, in particular SmB<sub>6</sub>. I will present both numerical and analytic results which show that the decoupling of the localized moments at the surface disturbs the compensation between light and heavy electrons and dopes the Dirac cone. Dispersion of these uncompensated surface states are dominated by inter-site hopping, which leads to much lighter quasiparticles in accordance with ARPES experiments [1]. Another tantalizing result about SmB<sub>6</sub> comes from the recent quantum oscillation experiments which lead to completely controversial interpretations. I will discuss a general theoretical viewpoint considering both bulk and surface scenarios and our new interpretation in terms of Kondo breakdown in topological surface states [2]. [1] V. Alexandrov, P. Coleman, O. Erten, Phys. Rev. Lett. 114, 177202 (2015) [2] O. Erten, P. Ghaemi, P. Coleman arXiv: 1510.02313 (2015)

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