



# Electronic structures and topological properties of f-electron mixed-valent/Kondo systems

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A great deal of recent attention has been paid to the topological nature in f-electron systems including a mixed-valent/Kondo insulator SmB<sub>6</sub>. We have investigated the topological properties of SmB<sub>6</sub>, based on the dynamical mean-field theory (DMFT) calculations and the density-functional theory (DFT) slab calculations [1,2], and compared them with those of a similar mixed-valent system of golden phase SmS [3] and other f-electron B<sub>6</sub> system of YbB<sub>6</sub> [4]. We have examined the temperature-dependent evolution of electronic structures, the termination-dependent physical properties, the spin chirality of the surface in-gap states, and the characteristic temperature scales for the Kondo/mixed-valent systems.

[1] J. D. Denlinger, J. W. Allen, J.-S. Kang, K. Sun, J.-W. Kim, J. H. Shim, B. I. Min, Dae-Jeong Kim, Z. Fisk, arXiv:1312.6637.

[2] Junwon Kim, Kyoo Kim, Chang-Jong Kang, Sooran Kim, Hong Chul Choi, J.-S. Kang, J. D. Denlinger, B. I. Min, Phys. Rev. B 90, 075131 (2014).

[3] Chang-Jong Kang, Hong Chul Choi, Kyoo Kim, and B. I. Min, Phys. Rev. Lett. 114, 166404 (2015).

[4] Chang-Jong Kang, J. D. Denlinger, J. W. Allen, Chul-Hee Min, F. Reinert, B. Y. Kang, B. K. Cho, J.-S. Kang, J. H. Shim, B. I. Min, Phys. Rev. Lett. 116, 116401 (2016).