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Electronic Properties of Fe-based Ladder Compounds FEI DU, Jilin University, KENYA OHGUSHI, Tohoku University, YUTAKA UEDA, Toyota Physical and Chemical Institute — The crystal structure of Fe-based superconductors found so far have two-dimensional conducting planes composed of a square lattice of Fe atoms coordinated tetrahedrally by pnictogens or chalcogens. Although there is no report on the discovery of superconductivity in Fe-based materials with one-dimensional structures, elucidating electronic states of such compounds is expected to give an important clue to the mechanism of superconductivity as well as a strong hint for searching new superconductors. We here report on electronic properties of a series of quasi-one-dimensional spin-ladder compounds AFe_2X_3 (A = K, Cs, Ba; X = S, Se) with a special focus on a solid-solution $AFe_2(S_{1-x}Se_x)_3$. We demonstrate that fruitful electronic states emerge as a consequence of the strong electron correlation effect and quantum fluctuations in a low dimensional crystal structure. The following is the list of papers directly related to this talk: [1] Y. Nambu, et al., Phys. Rev. B, 85 064413 (2012). [2] F. Du, et al, Phys. Rev. B 85, 214436 (2012). [3] F. Du, et al, Phys. Rev. B 90, 085143 (2014).

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