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Bi(114): A quasi one-dimensional metal with strong spin-orbit splitting PH. HOFMANN, University of Aarhus, DK, J.W. WELLS, University of Aarhus, DK and University of Science and Technology, Trondheim, N, H. DIL, F. MEIER, University Zurich-Irchel and SLS, PSI, CH, J. LOBO-CHECA, University Zurich-Irchel and SLS, PSI and Basel University, CH, V.N. PETROV, St. Petersburg Technical University, RU, J. OSTERWALDER, University Zurich-Irchel, CH, M.M. UGEDA, Free University Berlin, D and University Autonoma de Madrid, ES, I. FERNANDEZ-TORRENTE, J.I. PASCUAL, Free University Berlin, D, E. RIENKS, M.F. JENSEN, University of Aarhus, DK — The (114) vicinal surface of the semimetal Bi is found to support a quasi one-dimensional, metallic surface state. As required by symmetry, the state is degenerate along the $\bar{\Gamma} - \bar{Y}$ line of the surface Brillouin zone with a binding energy of $\approx$100 meV. In the $\bar{\Gamma} - \bar{X}$ direction the degeneracy is lifted by the strong spin-orbit interaction, as directly shown by spin-resolved photoemission. This results in a Fermi surface consisting of two closely separated, paralell lines of opposite spin direction. We discuss these findings in the light of the recently discovered topological stability of surface states on BiSb topological insulators.

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