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Band structure of SrTiO₃ with structural phase transition by using ARPES YOUNG JUN CHANG, AARON BOSTWICK, YONG SU KIM, Lawrence Berkeley National Laboratory, KARSTEN HORN, Fritz Haber Institute, ELI ROTENBERG, Lawrence Berkeley National Laboratory — SrTiO₃ has been widely investigated for its promising properties in the forms of bulk crystals and thin films. Since Mattheiss predicted the conduction band structure of SrTiO₃ with the threefold degenerate Ti 3d bands and its change along the cubic-to-tetragonal phase transition in 1972, there have been many of experimental and theoretical efforts. However, direct measurement of the conduction band structure along the phase transition is not yet achieved. In this talk we present the conduction band structure of SrTiO₃ (001) with its temperature dependence by using synchrotron based angle-resolved photoemission spectroscopy (ARPES) measurements. We discuss the shape of the conduction bands and many-body effects.

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