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The effect of the energy and the momentum resolution on the extraction of Eliashberg function from angle-resolved photoemission spectroscopy TEYU CHIEN, HONG LIU, WARD PLUMMER, University of Tennessee, Knoxville TN — The effects of energy and momentum resolution on the extraction of Eliashberg function from angle-resolved photoemission spectroscopy (ARPES) have been examined. The advantage of ARPES is that it can obtain the information of the dispersion of quasiparticles with energy and momentum resolutions. Moreover, recently, Eliashberg function can be directly extracted from the ARPES data by means of Maximum Entropy Method (MEM). The data near the Fermi energy are very important for the extracting procedure, and, unfortunately, are severely affected by the energy resolution. The case study here is the electron phonon coupling system – Be(0001) surface. MEM works improper when the energy resolution is larger than 10 meV. A truncation method was proposed to make MEM can work with worse energy resolution up to 30 – 40 meV. This method reduces the needs of ultra-high energy resolution of the instrument used in ARPES experiment.

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