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Spectral properties of the two-dimensional Hubbard model with next-nearest-neighbor hopping near the Mott transition MASANORI KOHNO, International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Japan — The single-particle spectral properties of the two-dimensional Hubbard model with next-nearest-neighbor hopping near the Mott transition are investigated using cluster perturbation theory [1]. Based on the consideration of how the next-nearest-neighbor hopping shifts the spectral-weight distribution, the spectral features are explained by tracing the origins back to those of the one-dimensional and two-dimensional Hubbard models [1-3]. From this viewpoint, various anomalous features observed in hole-doped and electron-doped cuprate high-temperature superconductors, such as the pseudogaps in different momentum regimes between hole-doped and electron-doped cuprates, are collectively explained as properties of a two-dimensional system with next-nearest-neighbor hopping near the Mott transition.

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Masanori Kohno
International Center for Materials Nanoarchitectonics,
National Institute for Materials Science, Japan

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