This Week in Science

Achievable New Year's Resolutions

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The calculated surfaces in momentum space ("Fermi surfaces") for the charge carriers in the high-temperature superconductor YBa$_2$Cu$_3$O$_y$. Charge carriers can be electron-like or hole-like; blue indicates low-velocity, high-mass carriers, and red indicates high-velocity, low-mass carriers. This Fermi surface, first calculated theoretically, has recently been confirmed by several experimental spectroscopies. See page 46. [Image by R. E. Cohen with AVS 3.0 software; image printed on a Kodak XL7700 at the Naval Research Laboratory Connection Machine Facility]

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The calculated surfaces in momentum space ("Fermi surfaces") for the charge carriers in the high-temperature superconductor YBa$_2$Cu$_3$O$_y$. Charge carriers can be electron-like or hole-like; blue indicates low-velocity, high-mass carriers, and red indicates high-velocity, low-mass carriers. This Fermi surface, first calculated theoretically, has recently been confirmed by several experimental spectroscopies. See page 46. [Image by R. E. Cohen with AVS 3.0 software; image printed on a Kodak XL7700 at the Naval Research Laboratory Connection Machine Facility]