

# Charge Ordering at Metal-Insulator Transitions Studied by X-rays

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Two examples of resonant X-ray scattering for the study of charge order on materials exhibiting a “metal-insulator transition is given. The first, the exotic f-electron material  $\text{Yb}_4\text{As}_3$ , where the charge order is incomplete and the resonant X-ray scattering (RXS) data can be easier interpreted due to the well-predicted energy dependence of the scattering factors. The RXS results are compared with bond valence sum considerations and the non-resonant X-rays scattering data. The second, the  $\text{RNiO}_3$  perovskites, where resonant X-ray scattering is able to extract a quantitative charge difference of the two Ni sites in the insulating phase. Even though azimuthal angle dependence for the integrated intensities of the charge reflections is observed, it can be shown that this is not an indication of a simultaneous occurring of orbital ordering but only a unique property of the strain in the epitaxial film used in the experiments. The occurrence of a scattering in the polarization-rotated channel is discussed in connection with these results.