

21COE 物質階層融合科学セミナー
物性コロキウム

日時：10月27日(月) 16:00 - 17:30

場所：理学部 総合研究棟745号室(大学院講義室)

講師：U.Staub (Paul Scherrer Institute, Switzerland)

題目：Charge Ordering at Metal-Insulator
Transitions Studied by X-rays

Abstract: Charge localization at temperature induced metal-insulator transitions are of common interest in solid-state physics. There are a serie of materials in which charge localization is associated with ordering phenomena such as charge ordering, orbital ordering and or magnetic ordering. Such effects occur most commonly for 3d transition metal oxides, but they occur also for f-electron materials. X-ray (resonant) scattering is a powerful tool for getting more insight on the microscopic origin of these phenomena. Here we present results on the $RNiO_3$ perovskites, where a temperature dependent metal-insulator transition occurs. We can show that the metal-insulator transition is associated with the charge disproportionation on Ni (ordering), which can directly and quantitatively be studied by resonant X-ray scattering. The intensity of the reflections sensitive to the quadrupoles seem little affected by the metal-insulator transition, indicating that there is no orbital ordering. The second material studied is Yb_4As_3 , an exotic material which exhibit a metal-insulator type transition and is a good model system for a 1-dimensional magnet at low temperatures. Here resonant and non-resonant X-ray scattering is used to study in detail the charge and structural order parameters related to the charge order on the Yb ions, which seem to deviate significantly from theory.

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15:45 よりコーヒー、紅茶、お菓子を用意します。カップを持ってお集まり下さい。

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