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LPTMS, CNRS & University Paris-Sud, Orsay, France
PosTech in Pohang 2016
Course of 6 lectures given at CALDES-IBS :
Center for Artificial Low Dimensional Electronic Systems

Local, nonlinear, non-stationary, and dynamical effects
in low-dimensional cooperative electronic states.

Lecture 1. Low dimensional electronic systems:
symmetry broken ground states and their collective effects; theoretical models.

Lecture 2. Solitons in correlated electronic systems at one dimension and beyond.

Lecture 3.
Pump-Induced Phase Transitions.

Lecture 4. Dynamical patterns of phase transformations from self-trapping of quantum excitons.

Lecture 5. Dynamical phase transitions in cooperative electronic systems induced by ultra-fast optical pumping or voltage pulses.

Lecture 6. A story of field-induced rising of the superconductivity or distraction of the Mott state. Transient and local transformations of collective electronic states under the electric field or the current.

Lecture 7.
Electronic ferroelectricity: from realities of organic conductors to perspectives of conjugated polymers.