



ID de Contribution: 3

Type: **Lecture / lecture series**

## Introduction to structural phase transitions

*lundi 17 mai 2021 15:00 (1 heure)*

1. Basic concepts of the Landau theory. Critical behaviour. Symmetry of the order parameter. Secondary order parameters. Specificity of first-order transitions. Useful rules for applying the theory. Construction of phase diagrams involving phase transitions.
2. Application of the theory to illustrative examples of structural transitions induced by a single irreducible representation. Transitions induced by several order parameters. Order parameter replication. Incommensurate phase transitions. Analysis of the applicability of the Landau theory to structural transitions in real systems.
3. Analysis of the critical behaviour of structural transitions in real systems. Agreement and disagreement with the theoretical predictions. Dependence of the critical behaviour on the effective space dimensionality, the order parameter dimension, the order parameter anisotropy, the range of the anisotropic interactions. Influence of elastic degrees of freedom. Specific critical behaviour of incommensurate structural transitions. Influence of defects on the critical behaviour.

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**Classification de thématique:** 3. Structural phase transitions and other unitary problems