INTRODUCTION TO MODULATED STRUCTURES

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Modulated structures are crystal structures, whose basic periodicity is perturbed in a well-defined manner that keeps the structures long-range ordered. The periodicity of the perturbation can be commensurate with the basic periodicity, then the structure is called commensurately modulated, but it can be also incommensurate with the basic periodicity. In that case the structure is called incommensurately modulated and it is aperiodic. However, it is still long-range ordered, and the presence of the long-range order distinguishes modulated structures from disordered structures.

The lecture will introduce the basic geometric concepts behind structure modulation, basic types of modulation and the concept of modulation functions. It will also introduce the construction of superspace, which is central to the crystallographic description of modulated structures.