Profesor Henrik Stetkær

The lecture is aimed at graduate students seeking an accessible introduction to those functional equations that generalize the classical relations between the trigonometric functions, like the sine addition formula. The material throws light on the properties of solutions of the functional equations that are valid on all groups or at least on all groups of a special type (like connected solvable Lie groups). We illustrate the theory by thoroughly calculating explicit formulas for the solutions of the functional equations on concrete examples of such groups, like the Heisenberg group, the (ax + b)-group, SL(2;R) etc.

Non-abelian harmonic analysis comes into play. We shall try to outline what the research of the last 10-20 years has contributed of new knowledge in the field. We go through a number of concrete examples in detail to illustrate the theory; some of them have not earlier appeared in text books. The methods used will center around functional analysis applied to representations of locally compact groups, non-abelian harmonic analysis, abstract algebra, analysis and topology.