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Physical properties of the CuMnAs alloy - a material promising for antiferromagnetic spintronics

Today, the CuMnAs alloy is an extensively studied material due to its promising properties for antiferromagnetic spintronics. However, CuMnX Heusler alloys cannot be grown without defects and estimating the precise stoichiometry by X-ray analysis is difficult due to the very similar X-ray scattering properties of Cu and Mn atoms. And since, up to now, reliable neutron diffraction data for real samples are also not available, computer simulations are an effective tool to find most probable defects and relate their concentrations to measured transport characteristics. The role of defects in the antiferromagnetic CuMnAs and in the prototype Heusler alloy CuMnSb has been investigated from first principles.

The calculations reveal that electron correlations play an important role for the phase stability and that both Mn/Cu exchange and vacancies on Mn- and Cu-sublattices are the most probable defects.

All interested colleagues are welcome to this seminar lecture (45 min. presentation followed by discussion)

Friedrich Aumayr
(LVA-Leiter)

Josef Redinger
(Seminar Chair)