Crystal and magnetic structure of $CaCu_2O_3$

A typical example is the investigation of the structural and magnetic properties of $CaCu_2O_3$. This spin-ladder like cuprate crystallizes in the orthorhombic space group *Pmmn*. In order to give a detailed description of the magnetic exchange interactions between the Cu^{2+}-ions via O^{2-}-ions (superexchange) the interatomic distances were determined at 6 K. The copper spins in $CaCu_2O_3$ were found to be antiferromagnetically ordered below the Néel temperature T_N = 25.5 K with a propagation vector $\boldsymbol{k}$ = (0.428, ½, ½). The refinements of the magnetic structure resulted in a frustrated spin arrangement within the inter-ladder planes. The magnetic structure of $CaCu_2O_3$ is discussed in terms of the magnetic exchange interactions. *Reehuis, M., et al.*, in preparation.

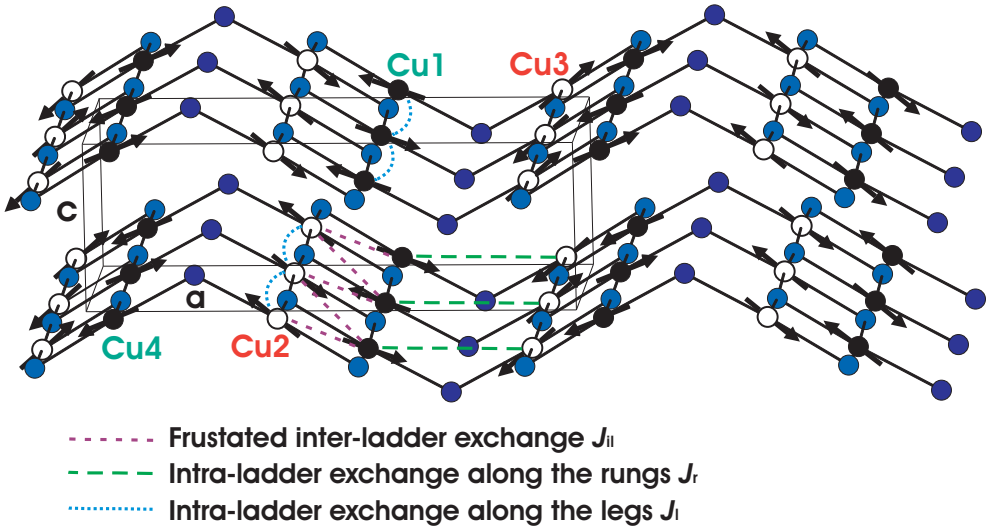

Fig. 1. Incommensurate magnetic structure of $CaCu_2O_3$. In order to describe the different exchange interactions via the oxygen atoms (blue filled circles) the maximum value of the magnetic moments is plotted.