Report for the experiment “Study of the structure of Co-rich decagonal Al-Co-Ni as a function of temperature”

Aims of the experiment was to investigate decagonal crystals with composition $Al_{72.5}Co_{18.5}Ni_9$ at room temperature as well as at elevated temperatures. For each temperature two different data sets were collected. One with oversaturated reflections and another without saturated reflections. The set with the oversaturated reflections is essential for collecting of the weak reflections that are crucial in the process of the structure determination of quasicrystals.
To collect data without overexposed reflections we applied several filters, in addition exposure time was only 4 sec. However, overexposed reflections were found in this data set during data analysis. Strong reflections are essential for the charge flipping algorithm that we implement for the structure solution of the quasicrystals.

In the data at high temperatures strong background was collected from the sample holders. Therefore there is a difficulty to analyze this data.