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# Lucky imaging multiplicity studies of exoplanet host stars

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**Abstract.** The multiplicity of stars is an important parameter in order to understand star and planet formation. In the past decades extrasolar planets have been discovered around more than 600 stars with the radial velocity and transit techniques. Many of these systems present extreme cases of massive planetary objects at very close separations to their primary stars. To explain the configurations of such systems is hence a continued challenge in the development of formation theories. It will be very interesting to determine if there are significant differences between planets in single and multiple star systems.

In our ongoing study we use high resolution imaging techniques to clarify the multiplicity status of nearby (within 250 pc) planet host stars. For targets on the northern hemisphere we employ the lucky imaging instrument Astralux at the 2.2 m telescope of the Calar Alto Observatory.

The lucky imaging approach consists of taking several thousand short images with integration times shorter than the speckle coherence time, to sample the speckle variations during the observation window. We then only choose the so called "lucky shots" with a very high Strehl ratio in one of the speckles, to shift and add, resulting in a final image with the highest possible Strehl ratio and therefore highest possible angular resolution.

We will present recent results of our study at the Calar Alto Observatory, as well as observations undertaken with the RTK camera at the 20 cm guiding telescope in our own observatory in Groschwabhausen.