

A Detection System for Laser Spectroscopy Experiments at CRYRING

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In order to enable laser spectroscopy experiments at CRYRING, a new general purpose fluorescence detector is being developed at the University of Münster. The design allows detection from ultraviolet wavelengths to the near infrared regime. Thus, the detector can be used to observe a large variety of atomic transitions. Among others Mg⁻ (at 280 nm) and Ca⁺ (at 854 nm/866 nm) ions have transitions in the wavelength regime covered by the detector.

Geant4 simulations have been performed in order to optimize the detection efficiency of fluorescence photons, while – at the same time – suppressing the detection of background photons.

This is achieved by an elliptical detector geometry, which selectively focuses fluorescence photons from the beam axis onto one of three interchangeable PMTs.

Currently, the mechanical design of the hardware being completed and first components will be ordered soon.

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