# Doppler Shift Attenuation Method: The new setup and the commissioning experiment at the Maier-Leibnitz-Laboratory

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**Abstract**

Resonant (p, gamma) capture reaction rates are relevant for the production of intermediate mass elements in classical nova events. The resonant reaction rate is inversely proportional to the lifetime of the resonance state formed by the (p,gamma) reaction. Thus, if the rates cannot be determined in a direct measurement, lifetime measurements of those resonant states, in the Gamow window, provide an important constraint/ingredient for eventually determining these rates indirectly.
A new setup has been built to measure the lifetimes of excited states in nuclei in the range of fs up to a few ps. It is located at the Maier-Leibnitz-Laboratory in Garching, where a tandem accelerator with terminal voltages up to 13 MV provides heavy ion beams.
In the commissioning experiment in 2011, the first excited state in 31S has been observed, being populated via the 32S(3He,4He) reaction and its lifetime has been determined. The experimental method, data and the analysis will be presented and the result will be discussed.

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