Contribution ID: **103** Type: **Poster**

# First time measurement of the 19F(p, α1)16O reaction at astrophysical energies: evidence of resonances through the application of the Trojan Horse Method

*Tuesday, 26 June 2018 19:00 (1h 30m)*

The 19F(p,α)16O reaction is an important channel of fluorine destruction in H-rich environments as the outer layers of asymptotic giant branch (AGB) stars. Measurements of the 19F(p,α)16O reaction via the Trojan Horse Method (THM) have shown the presence of resonant structures not observed before [1,2,3]. As a consequence, the reaction rate at astrophysical temperatures (about 10^7–10^8 K) exceeds up to a factor of 1.7 the one given in [4]. This fact might have important consequences for stellar nucleosynthesis, helping to solve the gap between the F aboundances predicted by theoretical models for AGB stars and the observed values [5]. Here we present the result of an experiment in which THM was used to extract the quasi-free contribution of the 2H(19F,α16O)n reaction to 19F(p,α1)16O channel, corresponding to the population of the first excited state of the 16O. Despite
the low statistics, three resonances in the Ecm energy region below about 500 Kev have been observed. This result confirms the findings of the previuos experiments focused on the 19F(p,α0)16O channel and hints again to an enhancement of the 19F(p,α)16O destruction rate, with respect to what presently predicted.

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**Session Classification:** Poster session