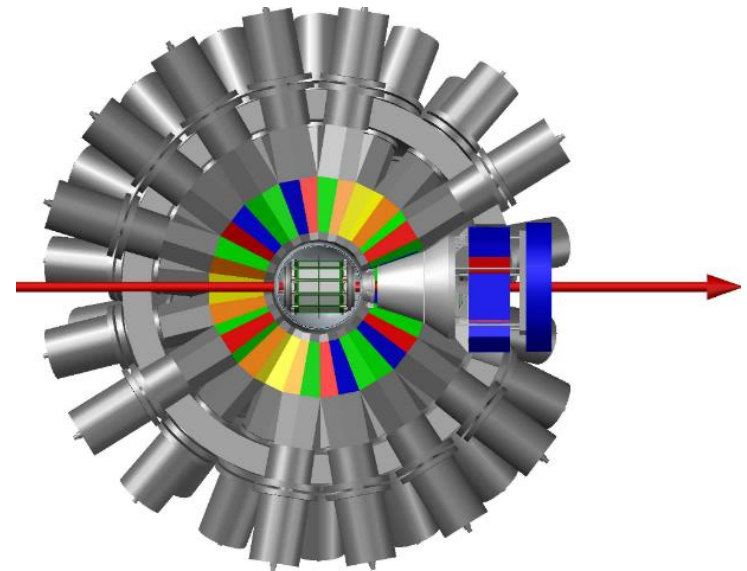


Key ^{19}Ne levels impact $^{18}\text{F}(p,\alpha)^{15}\text{O}$ rates

The $^{18}\text{F}(p,\alpha)^{15}\text{O}$ reaction destroys observable ^{18}F in novae. ^{18}F should be observable in nova outbursts but has never been detected potentially because of key levels in ^{19}Ne that greatly increase the destruction rate.

These key levels have been identified for the first time using the GODDESS (Gammasphere ORRUBA Dual Detectors for Structure Studies) array at Argonne National Laboratory. Gamma-rays from the decays of these levels were selectively identified and are plotted below. Their impact, however, is not sufficient to completely explain the lack of ^{18}F observations.

The ORRUBA array of silicon strip detectors is shown inside the Gammasphere detector. This configuration is known as GODDESS.



Counts as a function of Energy (MeV) identifying decays from important ^{19}Ne levels

