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## Statistical & gamma decay studies at iThemba LABS

*Thursday, 12 July 2012 17:30 (2 hours)*

### Abstract content <br> &nbsp; (Max 300 words)

The data from the study of the radiative strength function (RSF) of statistical & gamma rays from quasi continuum states in nuclei are critical in calculating nuclear reactions rates observed in astrophysical processes. They are also important for understanding the data from inertial confinement fusion at the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory (LLNL), USA which induces intense bursts of neutrons within tens of picoseconds. This flux is comparable to the neutron environments in core-collapse supernovae where r-process nucleosynthesis takes place. During this nuclei along the neutron drip line capture neutrons more rapidly compared to their disintegration due to beta decay, thus accounting for the creation of approximately half of the neutron rich nuclei with masses heavier than iron.

In this talk I will discuss our planned research at iThemba LABS in collaboration with European and US institutions for the measurements of the RSF in various nuclei. The measurements will be carried out by a model independent method with the AFRODITE array in conjunction with an array of silicon particle detector telescopes. The method consists of simultaneously detecting & gamma rays from the quasi-continuum and discrete states together with charged particle. Energies of the detected particles are used to infer the “entrance excitation energy” of the residual nucleus. These entrance energies are used to study the feeding properties to different discrete states.

### Apply to be<br> consider for a student <br> &nbsp; award (Yes / No)?

No

### Level for award<br>&nbsp;(Hons, MSc, <br> &nbsp; PhD)?

PhD

### Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

No

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