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## Characterization of Incomplete Fusion Reaction with AFRODITE and DIAMANT

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

The project concerns the nuclear reaction  ${}^7\text{Li}+{}^{176}\text{Yb}$  at 50MeV which was carried-out using the AFRODITE and DIAMANT facility of iThemba LABS.

A  ${}^7\text{Li}$  nuclide is considered suitable for breakup fusion(Incomplete fusion) reaction because of its well developed cluster structure of an alpha-particle and triton which are weakly bound in this nucleus. One of the fragments may be captured by the target while the other escapes at the beam velocity. Light charged-particles(alphas, tritons and protons) were detected with the DIAMANT(CsI) array in coincidence with gamma-rays detected by the AFRODITE(HPGe) spectrometer.

The project will involve data reduction to produce charged-particle-gated gamma-gamma coincidence matrices which will be analyzed with RADWARE. Insights will be gained into the Incomplete fusion reaction mechanisms initiated by the breakup of the incident  ${}^7\text{Li}$  projectile.

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

Yes

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

MSc

### Main supervisor (name and email)<br>and his / her institution

Simon Mullins, [mm@tlabs.ac.za](mailto:mm@tlabs.ac.za), from iThemba Labs-Johannesburg

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

No

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