# Use of a High Resolution $\Delta E$-$E$ Gas-Ionisation Detector for the $^{6}$Li + $^{10}$B System at $E_{LAB}$ = 20 MeV

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**Abstract:** Light heavy-ion scattering reactions at incident energies not far above the Coulomb barrier can yield useful information when investigating nuclear astrophysics problems. A 20 MeV $^{6}$Li beam provided at the EN Tandem Van de Graaff accelerator of iThemba LABS (Gauteng) was used for the measurement of $^{6}$Li + $^{10}$B nuclear scattering reactions. A $\Delta E$-$E$ gas ionisation detector, which operates on the principle of energy loss, provided excellent charged particle identification (charge and mass) was positioned at $\theta_{Lab}$ = 35$^{o}$ with respect to the beam. The scattered ions are stopped in a solid-state silicon surface barrier detector after traversing the $\Delta E$ gas ionisation cavity of the detector, which uses iso-butane gas. The very good energy resolution of the $\Delta E$-$E$ detector leads to various ground and excited states identified for the different reaction channels. Identified states are discussed and compared with the states already found in the previous work related to this low-energy nuclear scattering reaction.