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Cross Section Measurements for Neutron Induced Reactions on Bi Target using Quasi Mono-Energetic Neutron Beams of 90 and 140 MeV Energies.

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Abstract content (Max 300 words) **Formatting & Special chars**

Cross section measurements for the $^{209}\text{Bi}(n,5n)^{205}\text{Bi}$, $^{209}\text{Bi}(n,4n)^{206}\text{Bi}$ and $^{209}\text{Bi}(n,3n)^{207}\text{Bi}$ reactions were performed using quasi-monoenergetic neutron beams of 90 and 140 MeV energies. Neutron beams were produced from $^7\text{Li}(p,n)^7\text{Be}$ reaction using the neutron beam facility of iThemba LABS. Gamma rays emitted by the radioactive samples were measured using High Purity Germanium (HPGe) detector of the Environmental Radioactivity Laboratory (ERL) available at iThemba LABS. The acquired gamma ray spectra were analyzed using Multi Channel Analyzer (MCA), in order to identify the long lived radionuclides produced. The cross section data found from this work was compared with the existing experimental as well as the available evaluated data of the International Reactor Dosimetry Fusion File (IRDF) library. The comparison shows good agreement between the compared data. The cross section data from this work will be important for testing, improving and extending the IRDF library since the existing experimental data for high energy neutron is insufficient. To the IRDF library, the current contribution from iThemba LABS will improve the Bi data for high threshold energy (n,xn) reactions with cross section peaks located at 90 and 140 MeV neutron energies in order to meet the requirements of the higher energy nuclear installations.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

Main supervisor (name and email) and his / her institution

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