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"Neutron Imaging for nuclear and radiological security in Bangladesh" – Prospects and Possibilities

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With sea freight accounting for around 90% of global trade, screening shipping-container cargo presents significant challenges at seaports, particularly in countries like Bangladesh. Now a days Nuclear and Radiological application in Bangladesh is quite expanding. For this reason, it has become an alarming issue to ensure nuclear and radiological security in Bangladesh to prevent illicit trafficking of radioactive material. Main seaport of Bangladesh is Chittagong seaport which uses conventional x-ray to scan and detect any illegal material to stop illicit trafficking of radioactive material. In modern countries neutron imaging is introduced as a more effective material scanning process in the basis of identifying concealed radioactive sources. To enhance detection capabilities, Neutron Imaging can be integrated with X-ray imaging in a multi-modal system. While X-rays efficiently identify anomalies in cargo, NR excels in penetrating dense materials like metals and plastics that may obstruct X-ray scans. The aim of this study is to analyze the scope of neutron imaging in the context of Bangladesh. The focus of this study is on Chittagong Sea Port, where the possibility of integration of neutron imaging technology is discussed based on its prospects. The international standards and codes along with economic impact are also considered. This study will pave the way for consideration about installing neutron imaging technology alongside conventional x-ray imaging. The result of this study will depict and represent the effectiveness of neutron imaging techniques in Bangladesh which may motivate other scientists, engineers and regulatory bodies to step forward about installing Neutron imaging techniques in Bangladesh with more extensive research and study.

Technical Track

Student Competition

Primary authors: SAMI, Mhamudul Hasan (Military Institute of Science and Technology); TASNIM, Nazifa (Military Institute of Science and Technology); -AL-DIN, Noor (Military Institute of Science and Technology); PROMI, Sadia Noushin (Military Institute of Science and Technology)

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