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8He beta-delayed neutron emission at IDS

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As part of IS659 a beam of 8He was taken to IDS in May 2022. Here a setup was prepared with double sided silicon strip detectors (DSSDs), plastic detectors with high timing resolution for beta detection, the IDS HPGe Clover array and the IDS neutron detector array (INDiE). With an ADC trace captured for each event in the beta and INDiE detectors, different timing algorithms have been explored to maximize timing resolution for neutron time of flight.

As part of the ongoing analysis, we have been able to use the excellent spatial resolution of DSSDs to do particle identification of charged particles in coincidence with neutrons by conservation of momentum for the first time. Here we have seen neutrons in coincidence with recoiling 7Li nuclei, as well as the alpha-triton-neutron break up of highly excited states of 8Li, of which our first results will be shown.

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