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Ultra-Thin Converter Layers for Gas Based Neutron Position Detectors

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Gaseous neutron detectors are crucial tools to many scientific fields, as neutrons are used to probe matter, revealing structures and functions not accessible by other imaging means. 3He filled multi-wire chambers are being replaced by novel instruments coated with thick layers of boron,as 3He is now almost exclusively used for security applications. I will present a novel approach which relies on sub-micrometer boron layers for neutron conversion. It is a counter intuitive choice which profits from momentum conservation of the neutron capture reaction and provides superior information. Recent results and developments will be presented, showing the potential to achieve unmatched position resolutions, intrinsic full gamma-ray suppression and a strong reduction of the exposure time.

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