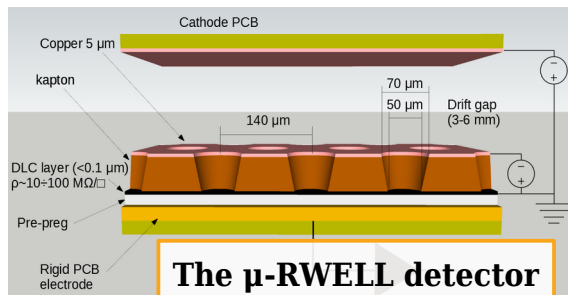


uRANIA: a micro-Resistive WELL for neutron detection

Matteo Giovannetti - LNF-INFN on behalf of the uRANIA-V project

u micro
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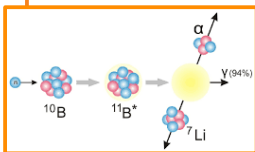


The μ -RWELL detector

^{10}B neutron converter

Due to the ^3He shortage a call for alternative solutions for thermal neutron detection arise. A ^{10}B conversion stage facing the gas gap, through **nuclear capture**, transforms a standard μ -RWELL in a **thermal neutron detector**, reaching efficiency up to **10%** for single detector plane.

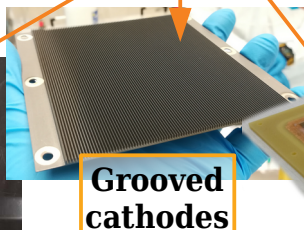
Different **converter geometries** are accessible:



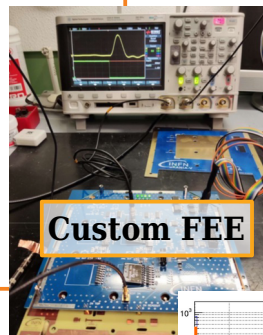
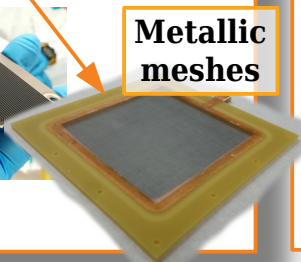
Planar cathodes



Grooved cathodes



Metallic meshes



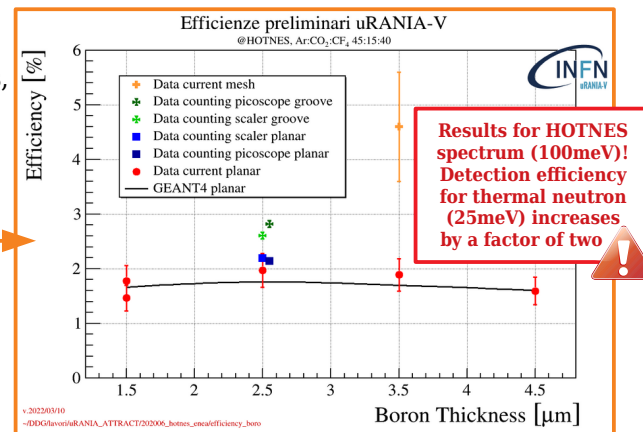
Custom FEE

HOTNES ENEA test facility



Summary and results

From simulations, to results!



- For the **planar cathode** a scan for different ^{10}B thickness has been performed in current mode, measuring an efficiency $\approx 1.5 \pm 2.0\%$
- The planar ^{10}B -coated **cathode** + ^{10}B -coated **mesh** configuration characterized in current mode exhibits an efficiency of $4.6 \pm 1.0\%$
- The counting mode measurements, performed for the ^{10}B -coated **planar** and **grooved** cathode layouts show the following results:
 - Planar $\rightarrow 2.19 \pm 0.05\%$
 - Grooved $\rightarrow 2.61 \pm 0.06\%$