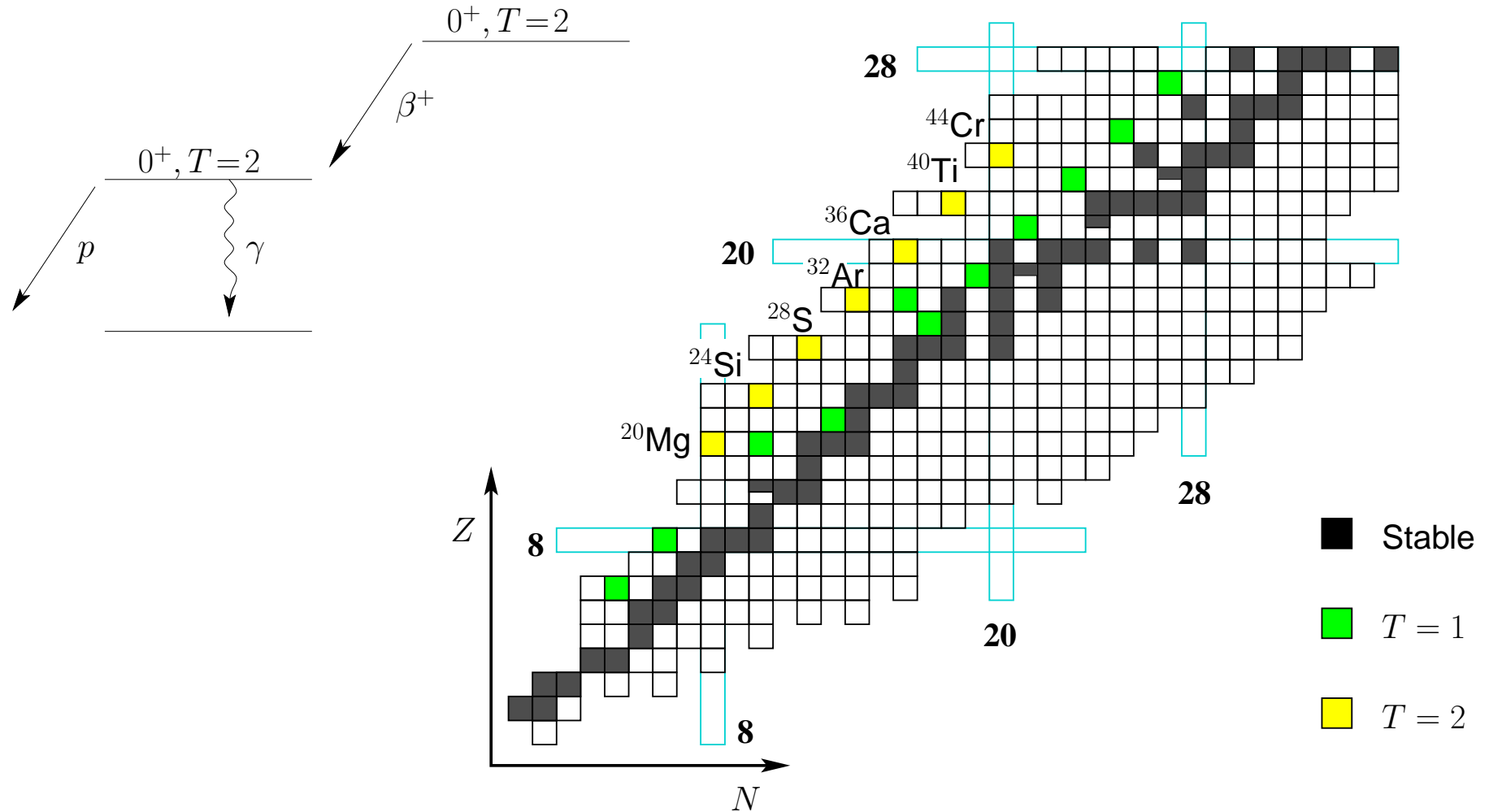


$T = 2$ superallowed decays

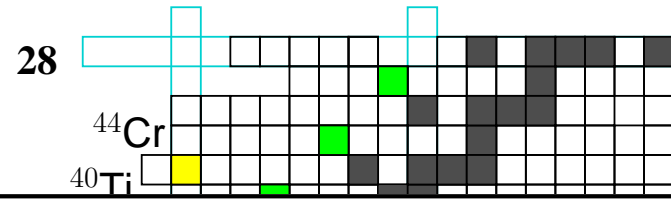
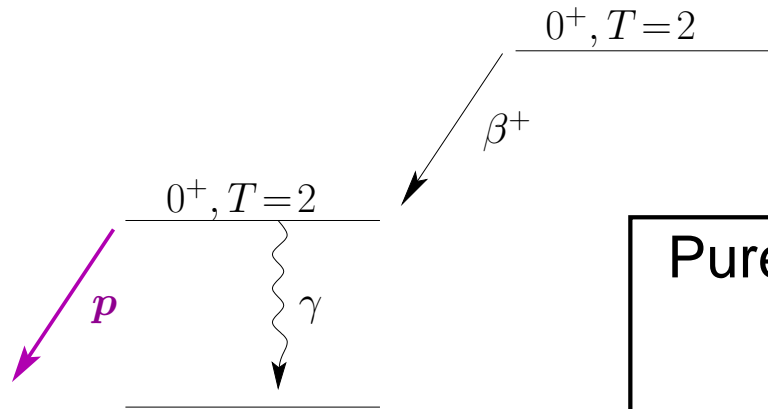


• $\beta - \nu$ correlations

• model-dependence of δ_C calcs seem to depend on $T \dots$

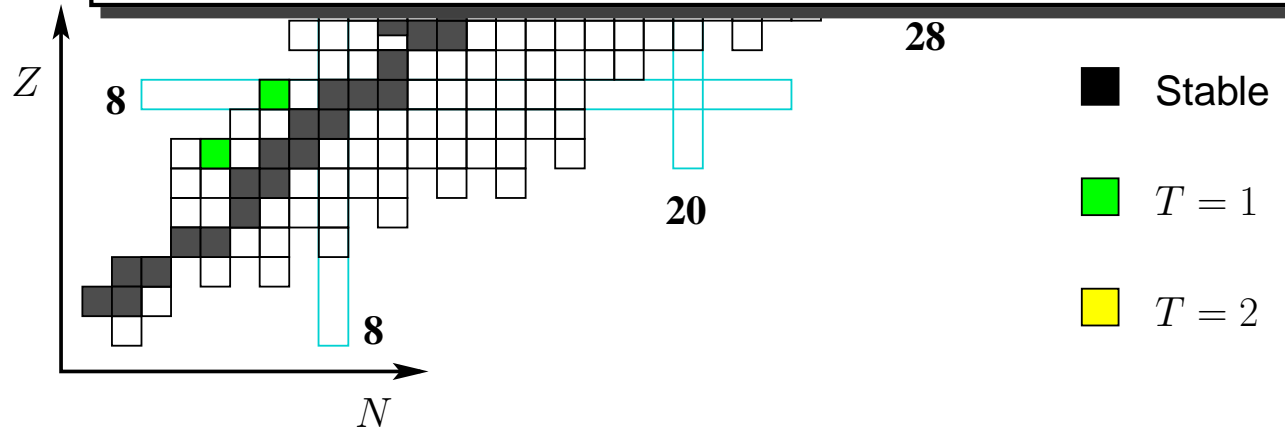
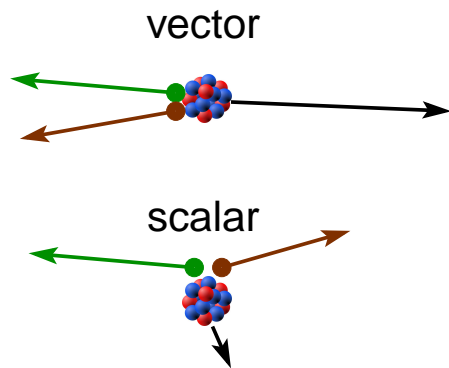
• new cases for V_{ud}

$T = 2$ superallowed decays



Pure Fermi decay \Leftrightarrow minimal nuclear structure effects; decay rate is simply given by:

$$p_e E_e (A_0 - E_e)^2 \xi \left(1 + a_{\beta\nu} \frac{\vec{p}_e \cdot \vec{p}_\nu}{E_e E_\nu} + b_F \frac{\Gamma m_e}{E_e} \right)$$



$\beta - \nu$ correlations

model-dependence of δ_C calcs seem to depend on $T \dots$

new cases for V_{ud}

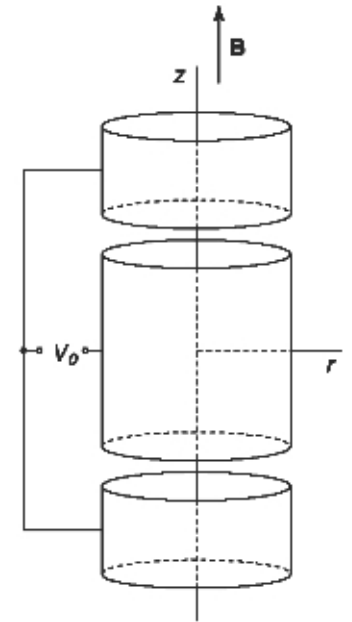
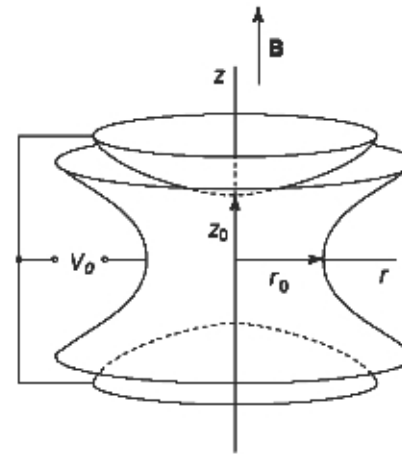
Using Ion Traps for Correlation Measurements

We can improve sensitivity of a correlation measurement by retaining information about the β

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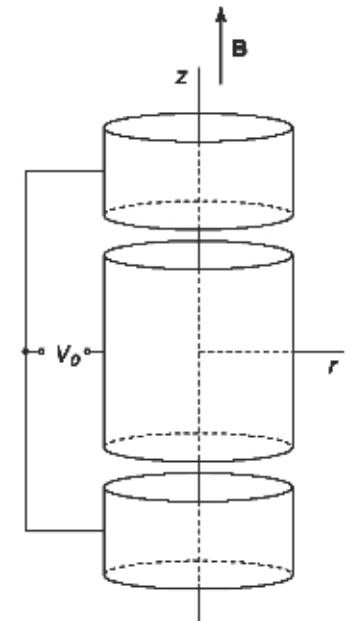
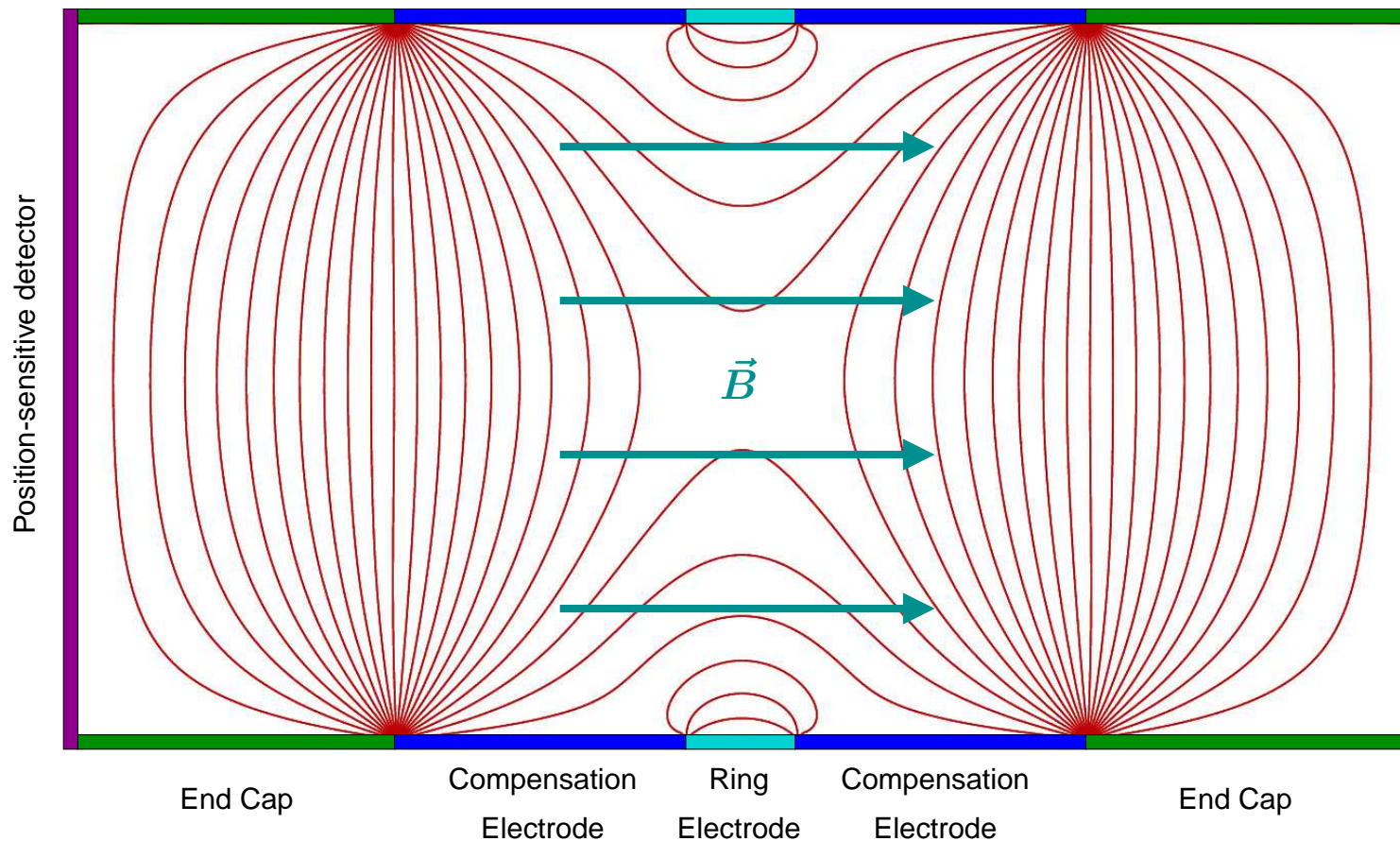
utilize technology of Penning traps to provide a **backing-free** source of localized radioactive ions!!



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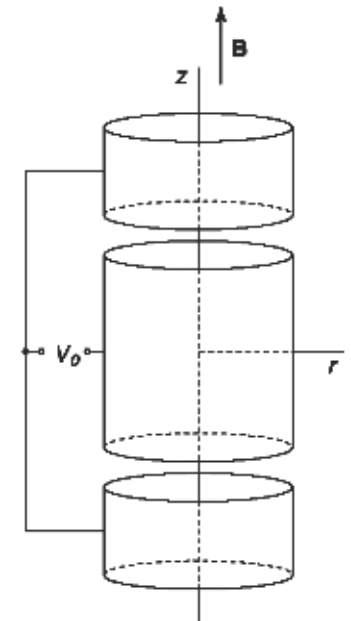
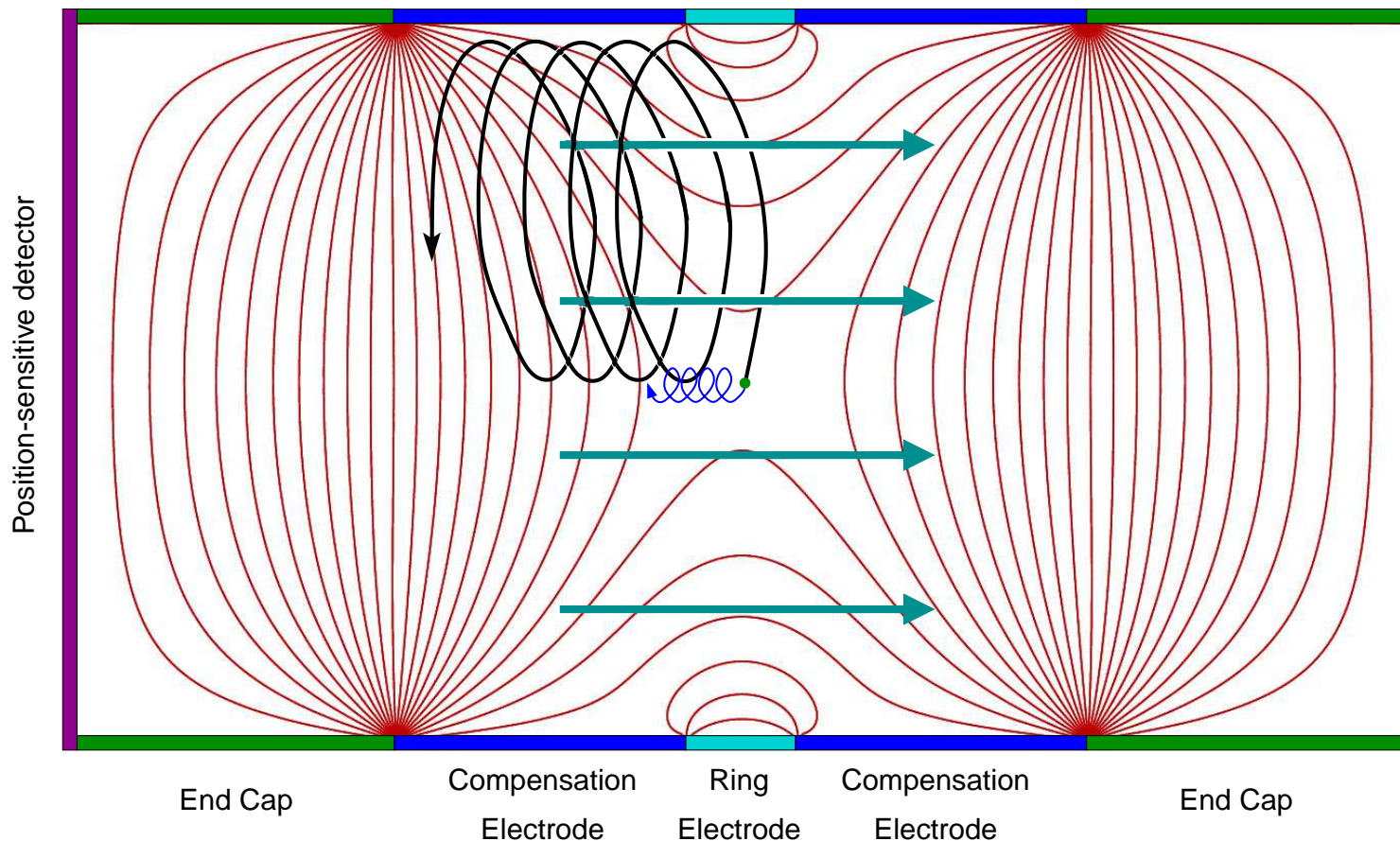
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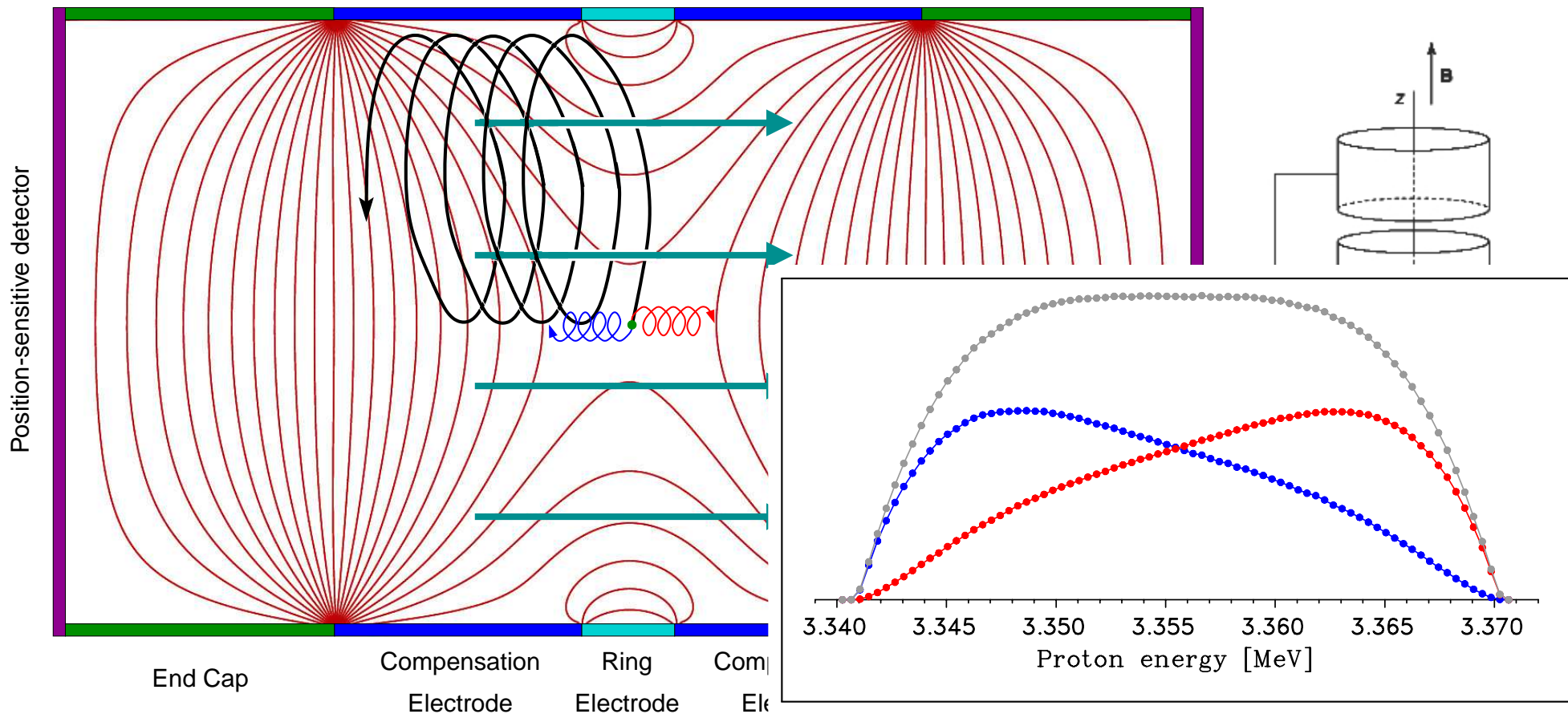
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Using Ion Traps for Correlation Measurements

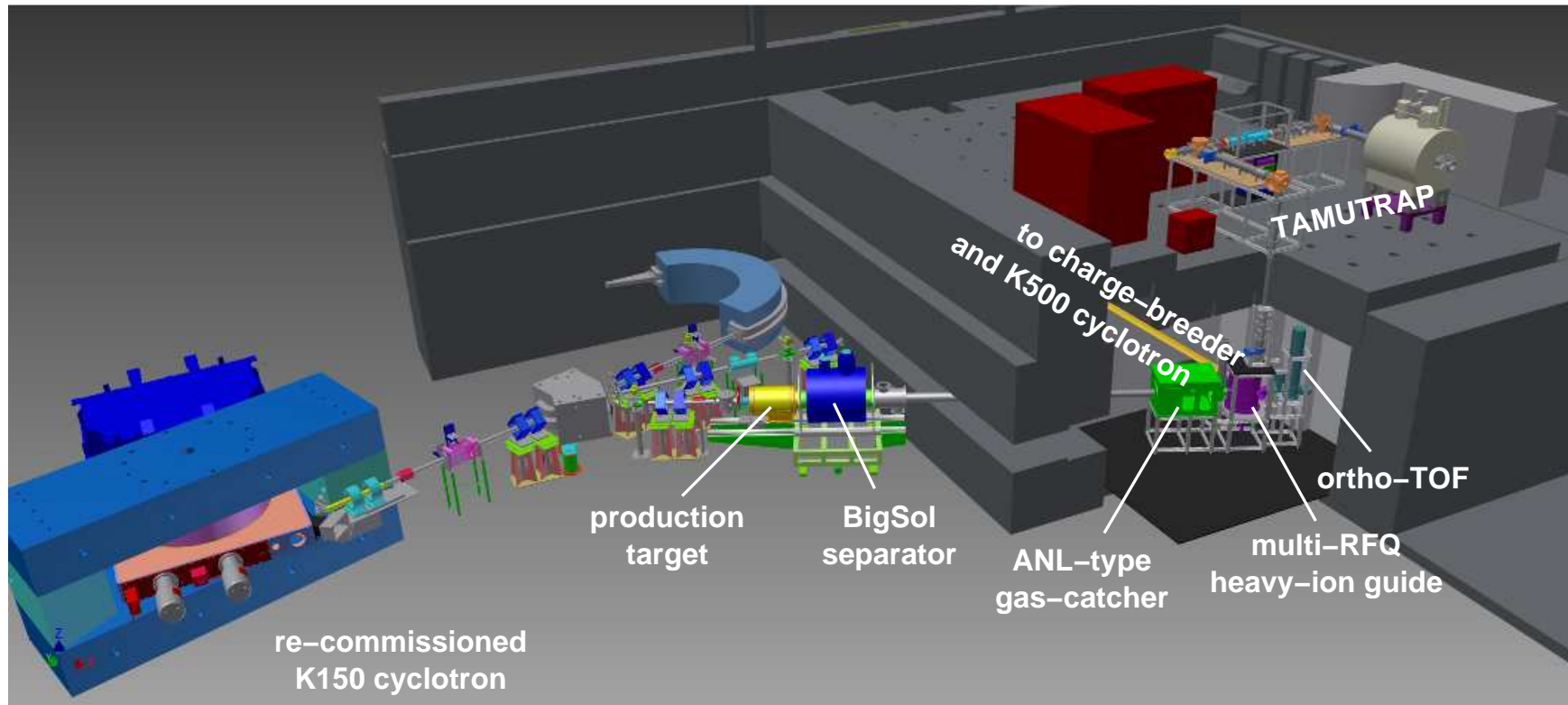
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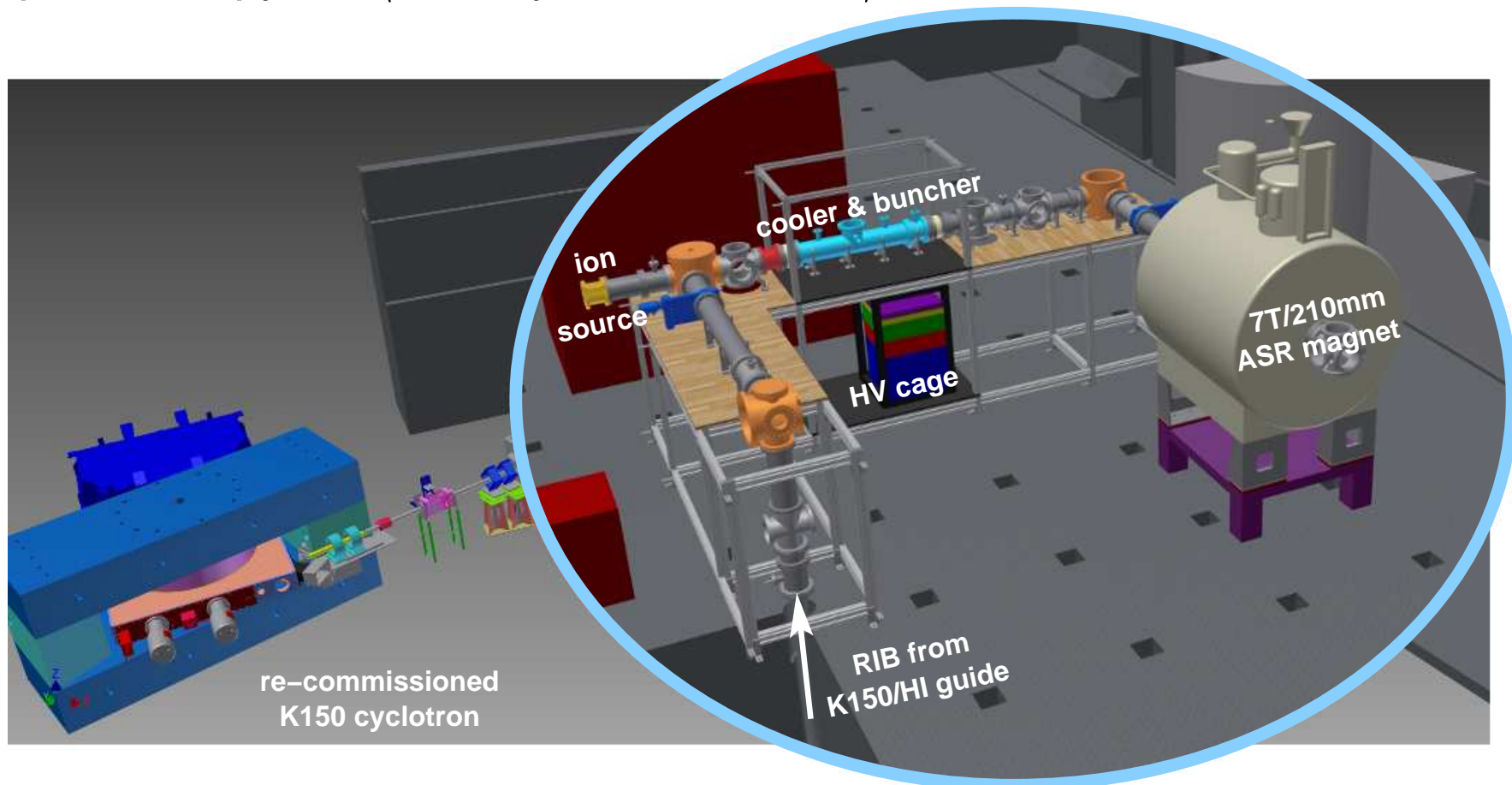
The *Texas A&M University Penning Trap*

- will be the **world's most open-geometry** ion trap!
- **uniquely** suited for studying β -delayed proton decays:
 $\beta - \nu$ correlations, ft values/ V_{ud}
- also amendable to mass measurements, EC studies, laser spectroscopy, ... \langle insert your idea here! \rangle

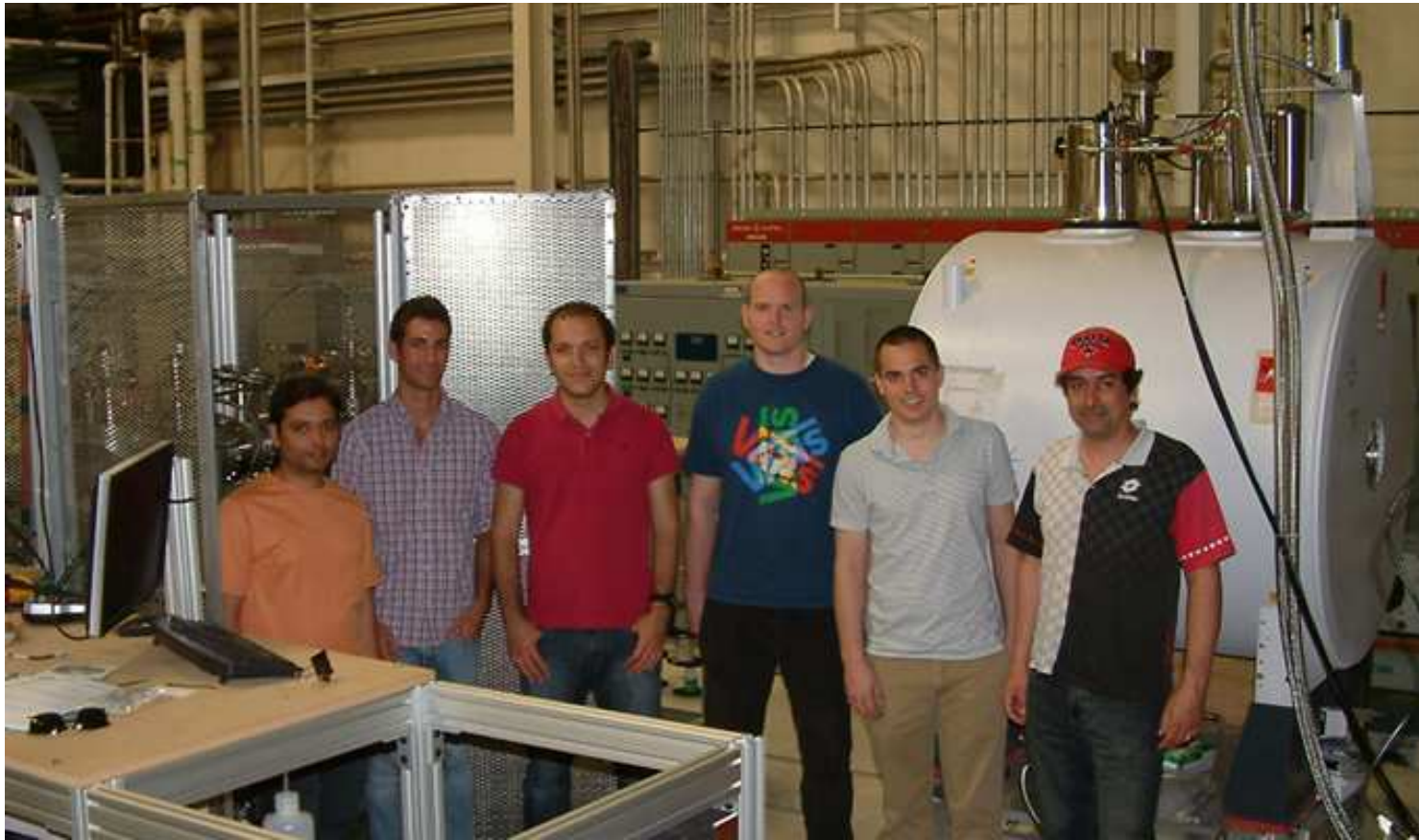


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The Mad Trappers



Spencer Behling, Mike Mehlman, Yakup Boran*, Ben Fenker, Praveen Shidling, Dan Melconian + 12 TAMU/REU undergrads

Funding/Support:



DOE ER40773, Early Career ER41747



TAMU/Cyclotron Institute