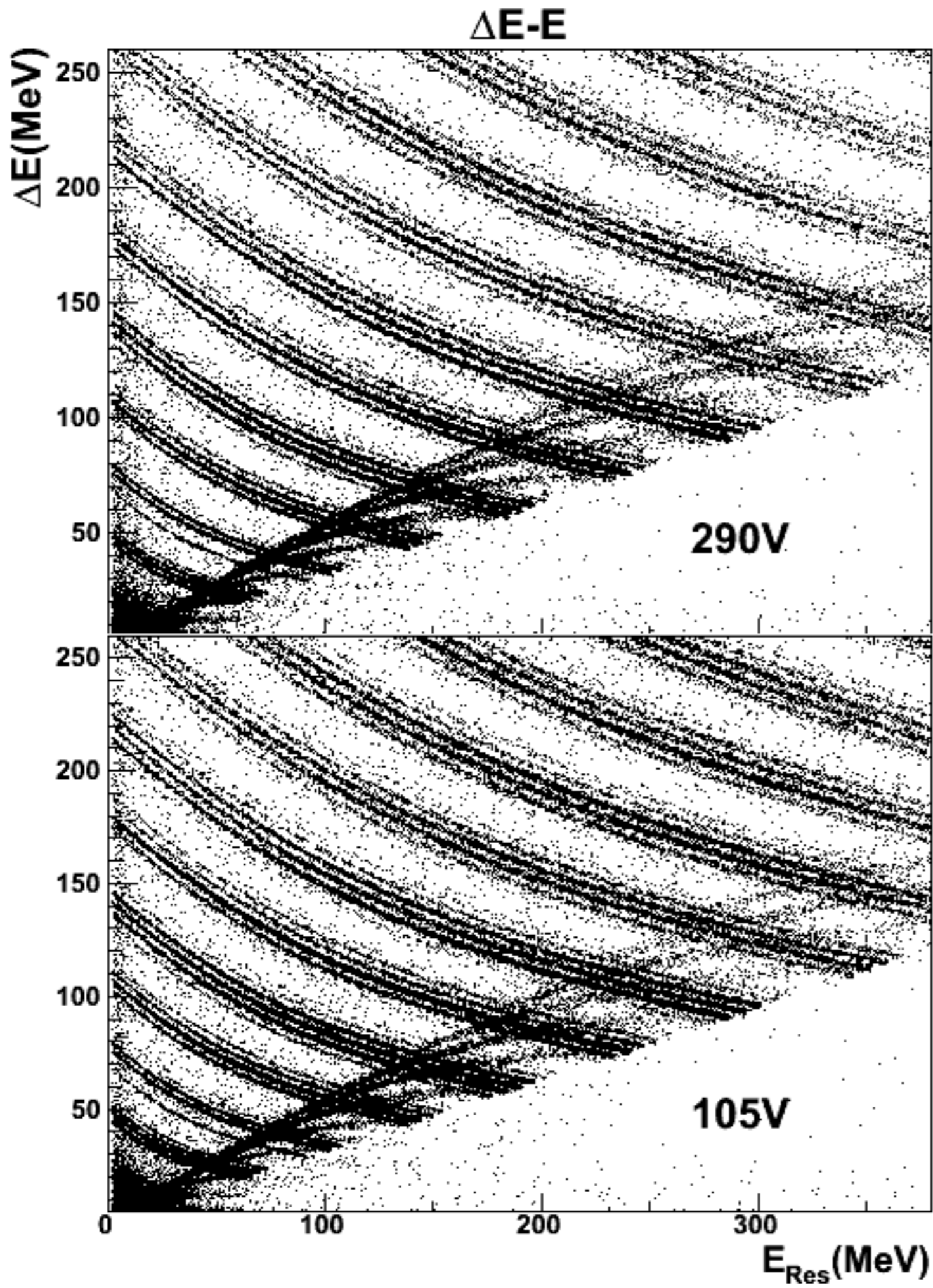


# Extracting information from partially depleted Si detectors with digital sampling electronics

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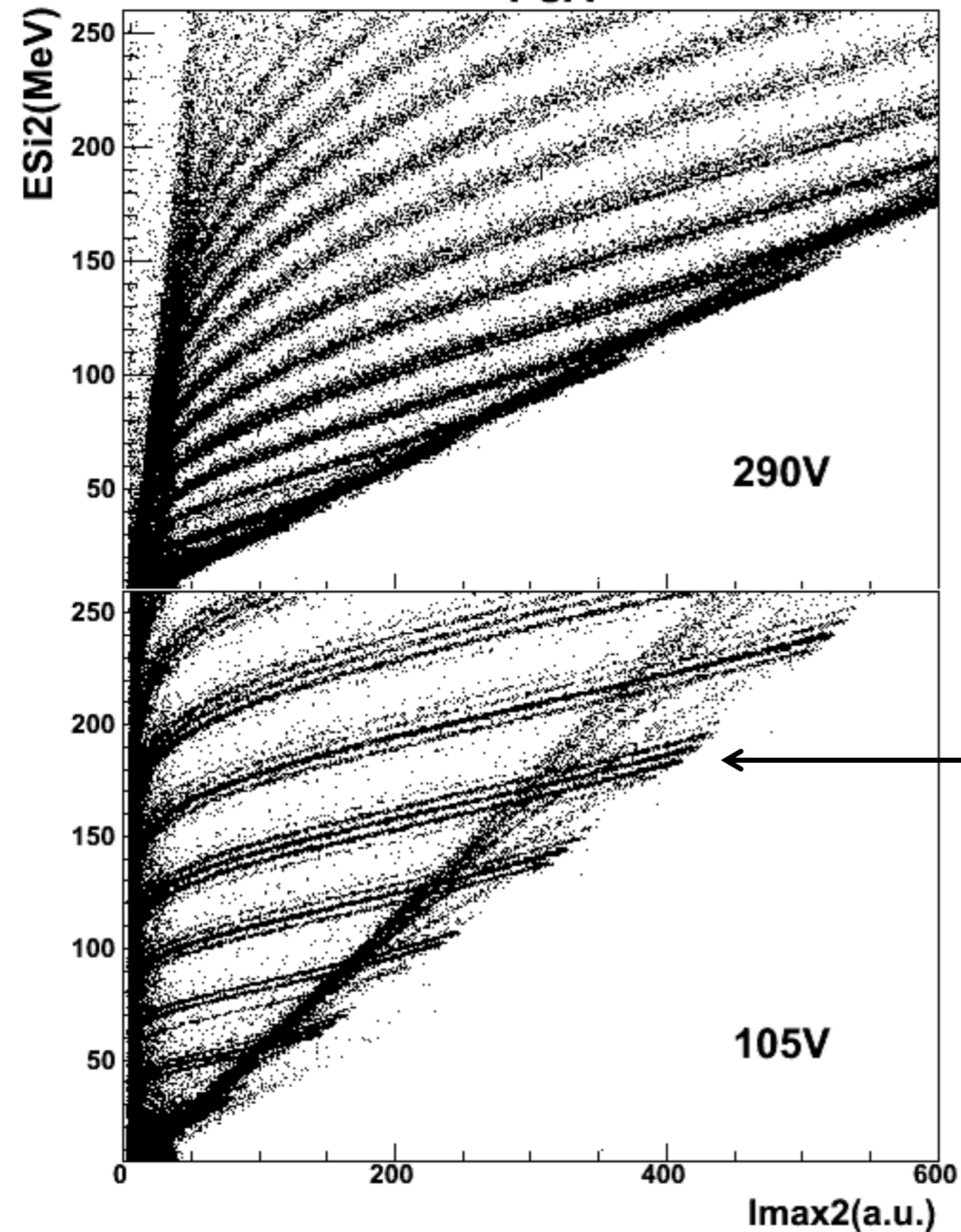
- Studied Fazio telescope with 3 stages: Si1 (300  $\mu\text{m}$ )-Si2(500  $\mu\text{m}$ )-CsI(10cm)
  - Current and charge signals digitized immediately after Preamplifier
    - Si1 full depleted (140V)
  - Five different bias voltages applied on Si2 have been tested

<b>V<sub>bias</sub> Si2 (V)</b>	<b>Not Depleted depth (<math>\mu\text{m}</math>)</b>	<b>Depleted depth (<math>\mu\text{m}</math>)</b>	<b>Not Depleted depth (%)</b>
105	200	310	40
130	170	340	30
200	90	420	20
235	50	460	10
290	0	510	0



- Only few % of difference observed between partially and totally depleted detector in efficiency of collection charge
- Energy resolution of  $\Delta E-E$  matrix does not change even at 105V with 40% of detector thickness not depleted

# PSA



PSA resolution change!!

A big difference in identification resolution has been observed between partially and totally depleted detector

much better isotopic separation is obtained using an underbiased detector