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The Condensed Krypton Source as a Calibration Tool for KATRIN

- ➔ Motivation and Features
- ➔ First Measurements
- ➔ Ellipsometry of Condensed Kr Films

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for the KATRIN collaboration

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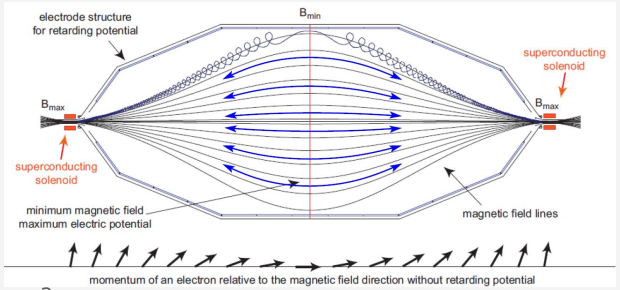
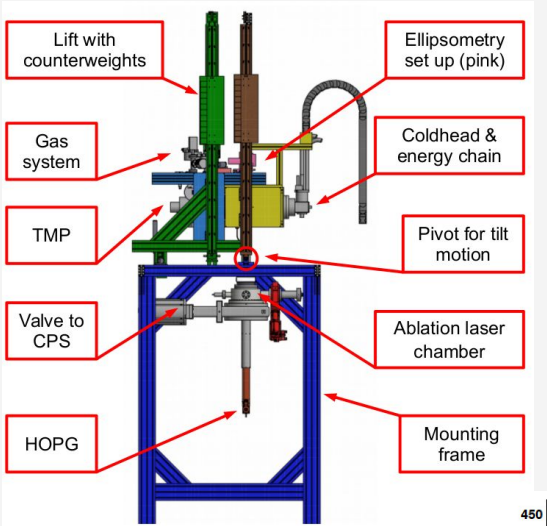
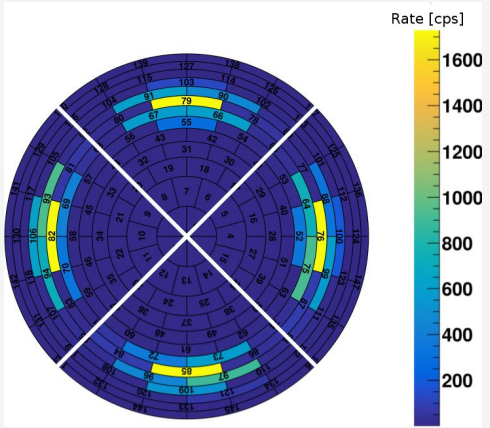
Institut für Kernphysik | WWU Münster

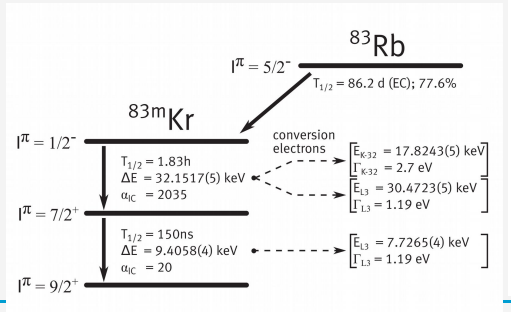
KATRIN:
electron energy measurements with a MAC-E filter

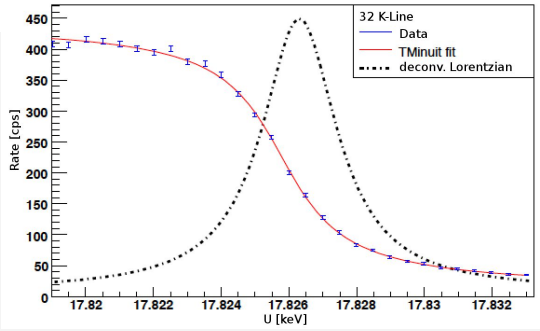


- For 200 meV/c^2 goal: precise knowledge of analyzing plane potential necessary
- Usage of a nuclear standard for energy calibration
- Condensed ^{83m}Kr as isotropically emitting conversion electron source with energy near the ^{3}T endpoint
- Complex setup with many subsystems:
  - Cryo- & vacuum
  - Gas
  - Laser ellipsometry (*in-situ* film monitoring)
  - Heating & Laser ablation
  - Mounted on a movable lift (per-pixel calibration)



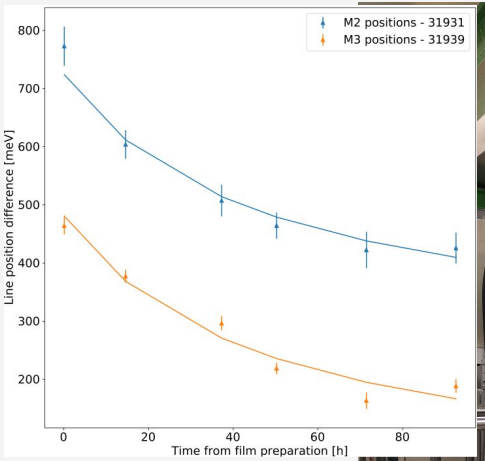


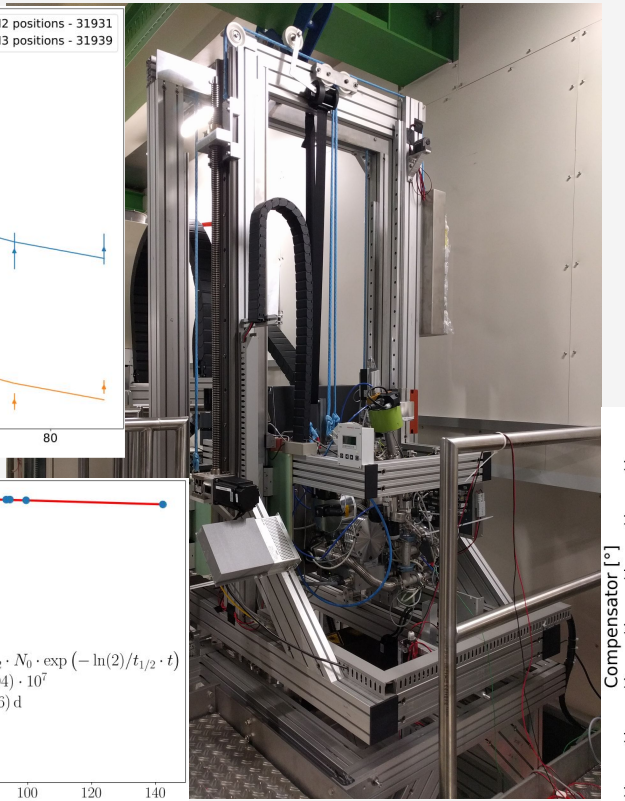


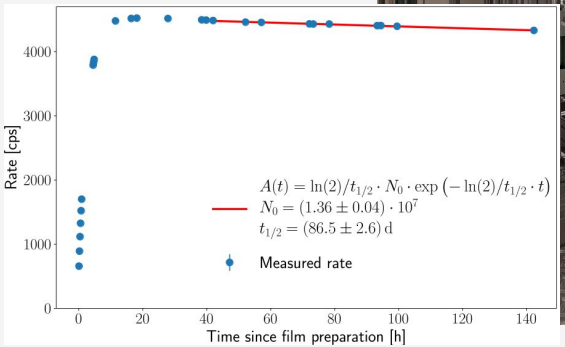


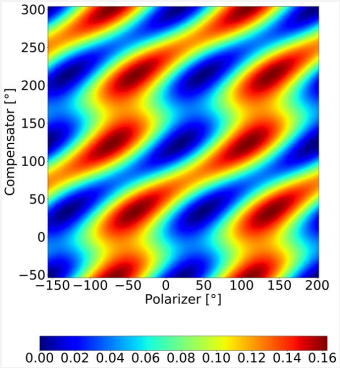
The Condensed Krypton Source as a Calibration Tool for KATRIN

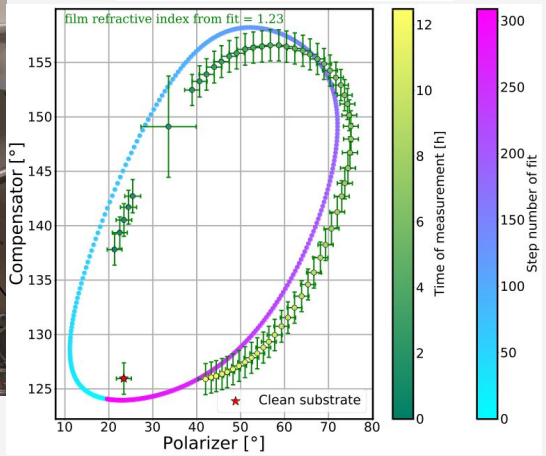
- Successful commissioning measurements last year, but drifts in energy
  - Modeling solid state effects
  - Improvement of vacuum conditions necessary
- New campaign this year
  - Enhance stability
  - Characterize the KATRIN main spectrometer











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For more information come see the poster at: Poster Wall #2 (Robert-Schumann-Room)

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