



12<sup>th</sup> Pisa Meeting on Advanced Detectors  
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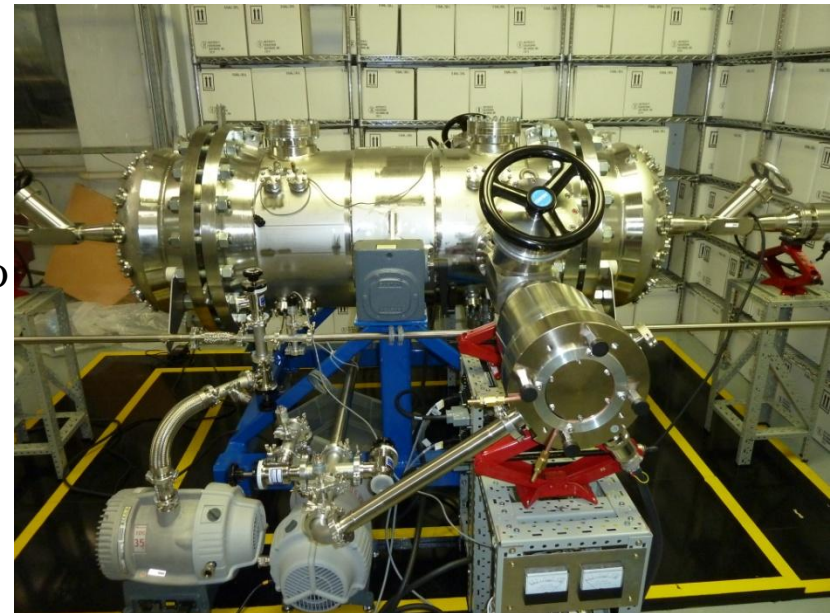
**R&D for the EXO-GAS experiment to search for neutrinoless double beta decay**

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**On behalf of the EXO collaboration**

## Goals of R&D

- Obtain energy resolution in xenon gas, in the range of pressures of 1-10 Atm, less than  $\sigma=1\%$  using proportional scintillation light (use CsI photo detectors)
- Reconstruct electron tracks
- Purify xenon gas using reliable purification techniques and certify impurities using gas purity analysis system (crucial for extraction of electrons and Ba ions)

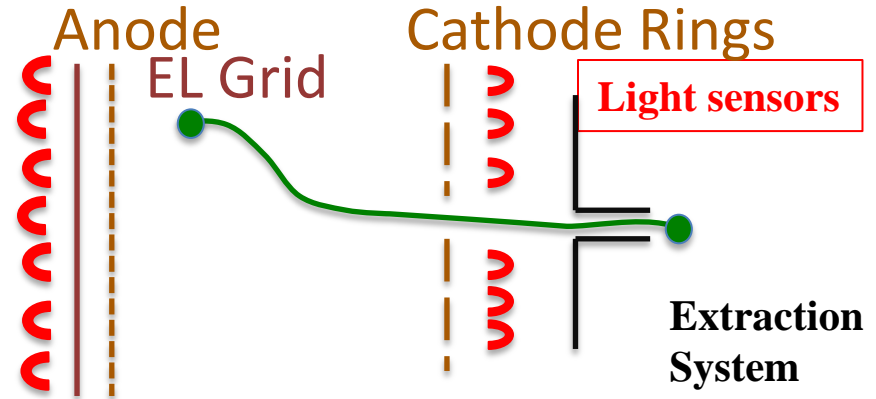


**A High Pressure Xenon gas detector for EXO-GAS**



## Ba tagging in Xenon gas

- Need to investigate basic properties of  $Ba^{++}$  ions in high pressure xenon gas (mobility, diffusion, identification, possibility of attachments to other impurities)
- Do  $Ba^{++}$  ions stay  $Ba^{++}$  in xenon gas? Seem to be normal in Ar gas.
- Dealing with possible  $Ba^{++}$  or  $Ba^+$  extracting issues (calculations show it is efficient if mass of ion=mass of gas-carrier)
- In the future, it is planned to construct and test the full extraction and counting system (construction of a new quadrupole system is on the way)



**A new quadrupole system for EXO-GAS**