



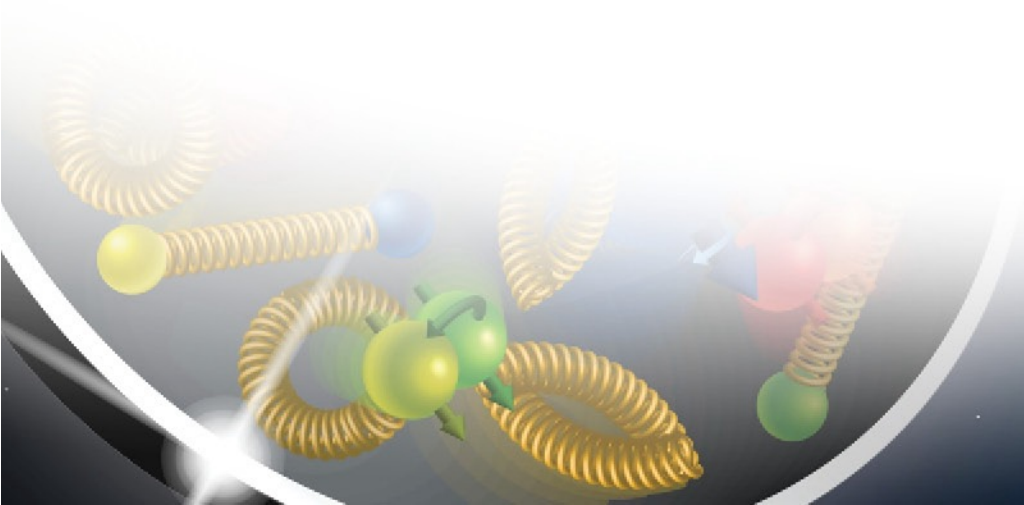
Rare Gas Availability for ePIC MPGDs

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Electron-Ion Collider

Drift Gas – Xenon

- Ukraine/Russia one of the biggest producers (~30-60% depending on source)
 - Obvious issues with getting gas from these countries currently
- Purity concerns, conversations mentioned needing 99.99999% (which isn't a typical purity)
 - Common research grades are: 99.995%, 99.999% and 99.9995%



Information from CERN

- ATLAS TRD

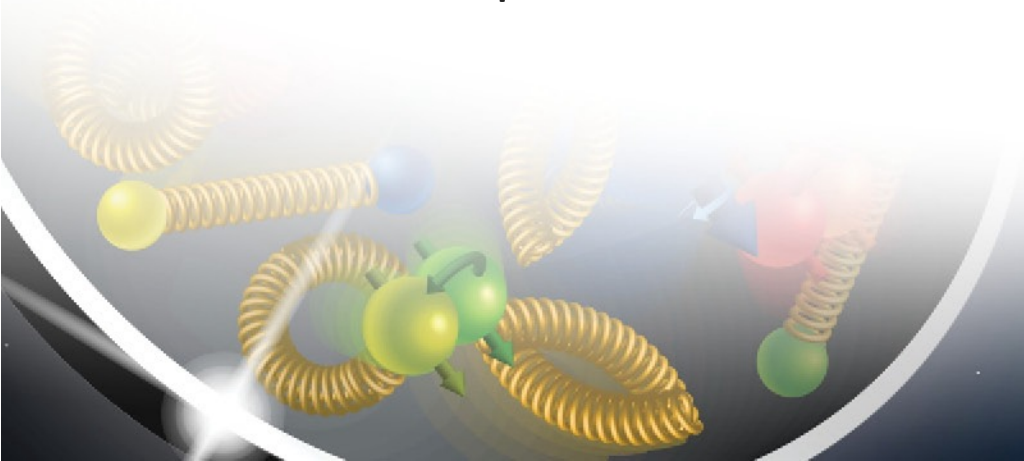
- Total volume of 2.5 m³
 - Leak rate of ~1 L/day
 - Lose ~200 L during recovery operations
- Purification system (with 99.999% base gas)
 - Ozone and radioactive Iodine removed via filters
 - N₂ and O₂ with liquid nitrogen freezing
 - Can only measure to 0.1% max precision, they assume 0.5% max for contaminants
- Purchases via CARBAGAS (Air Liquide company)
 - Delivery was 1-2 months
 - 120k CHF for 9k m³ in 2021
 - 267k CHF for 9k m³ in 2022
 - Estimated at 400k CHF in 2023

- ALICE TRD

- Quote from mid-July 450k 2023 CHF for 9.5 m³

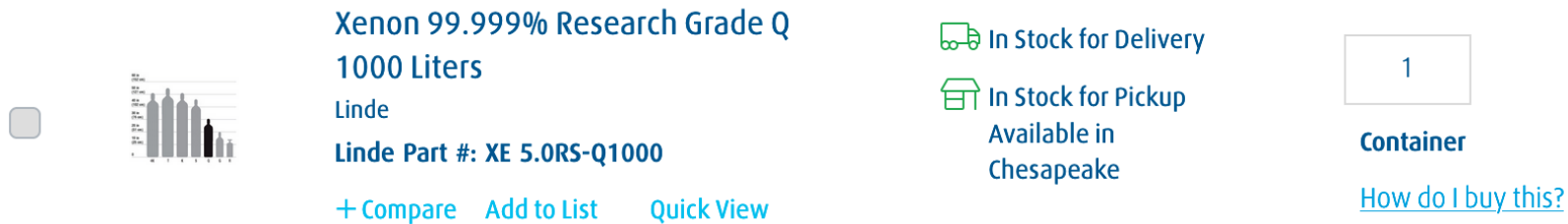
ePIC MPGDs

- Is a purification system needed? Currently not in P6
 - \$50k for gas system (i.e. just mixing/distribution/controls)
- Related to that, what purity is required?
- How much gas will the MPGDs need over their lifetime (or at least a reasonable time period)?
 - CERN places orders for 9k L



RFI

- Requested gas system expert in DSG to follow up with “local” vendors (assuming 99.999% is acceptable)
- Links are to companies’ datasheets
 - [Matheson](#)
 - [Praxair](#) (Linde)
 - Various sizes listed in stock online, but no pricing/quantity yet



The screenshot shows a product listing for Xenon gas. On the left, there is a small image of a gas cylinder and a bar chart. The main text reads: "Xenon 99.999% Research Grade Q 1000 Liters", "Linde", and "Linde Part #: XE 5.0RS-Q1000". Below this are three buttons: "+ Compare", "Add to List", and "Quick View". To the right, there are two status indicators: "In Stock for Delivery" with a truck icon and "In Stock for Pickup Available in Chesapeake" with a house icon. Further right is a quantity selector box containing the number "1", with the label "Container" below it and a link "How do I buy this?" underneath.

- [Air Gas](#) (Air Liquide)