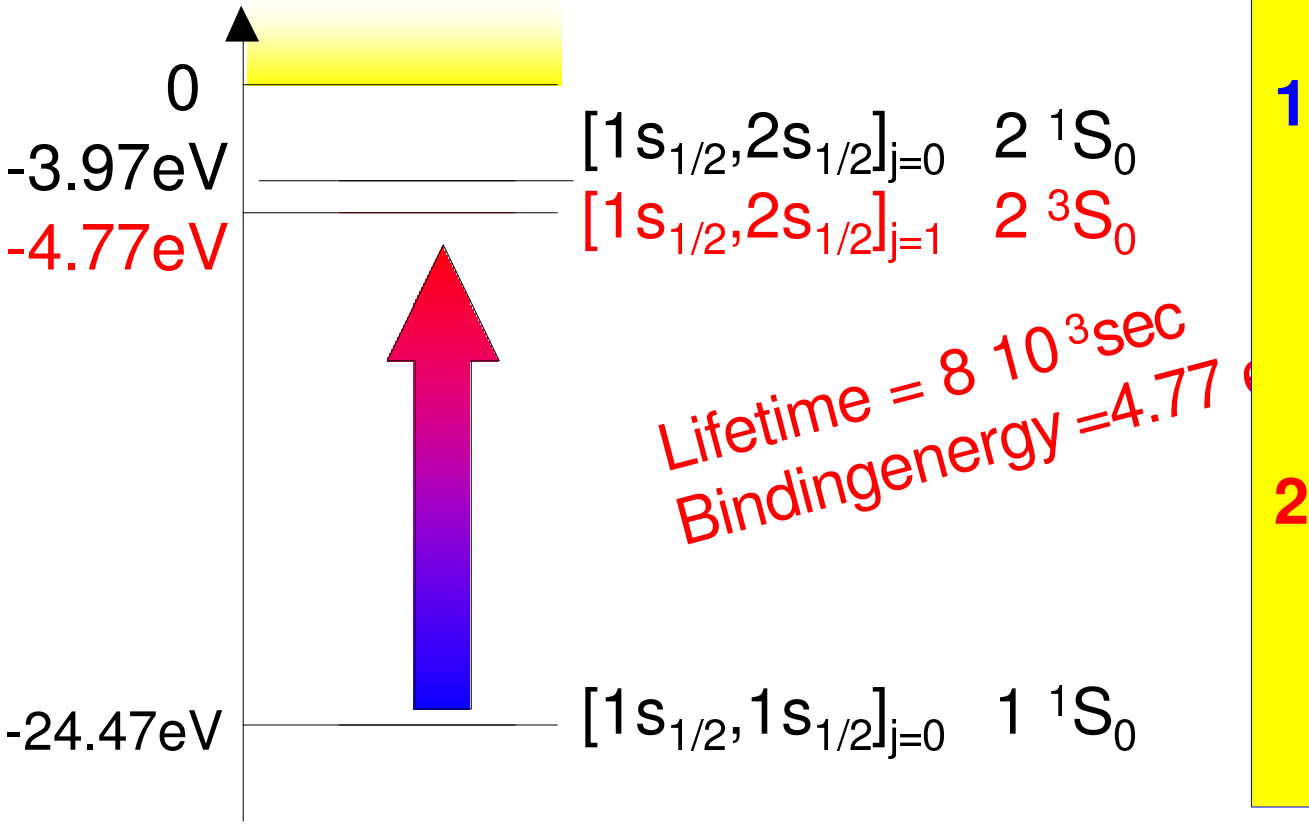
A Metastable Spinpolarized Gas Target for ESR

- **Goal: Provide an internal Target beyond ground state rare gases**

- 2 Electron system (Helium)
  different wavefunction for collision experiments
  (correlation, symmetry effects in single and double ionization)

- Spin polarization (relativistic effects)

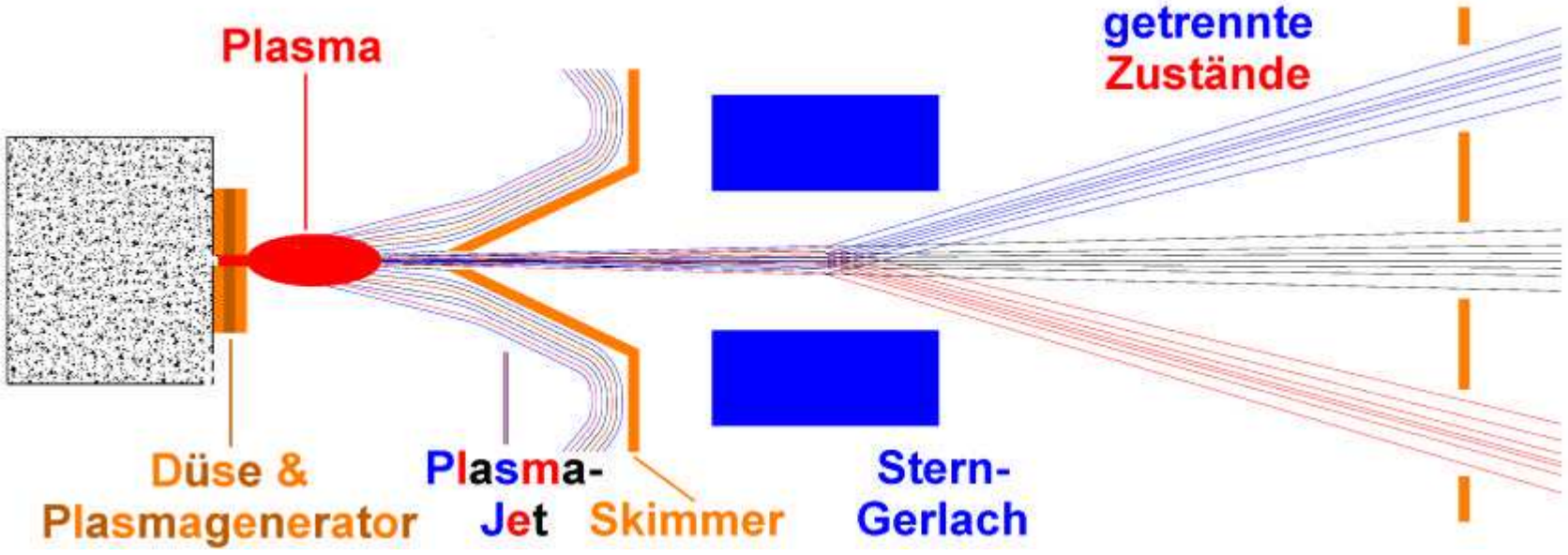
Metastable Helium



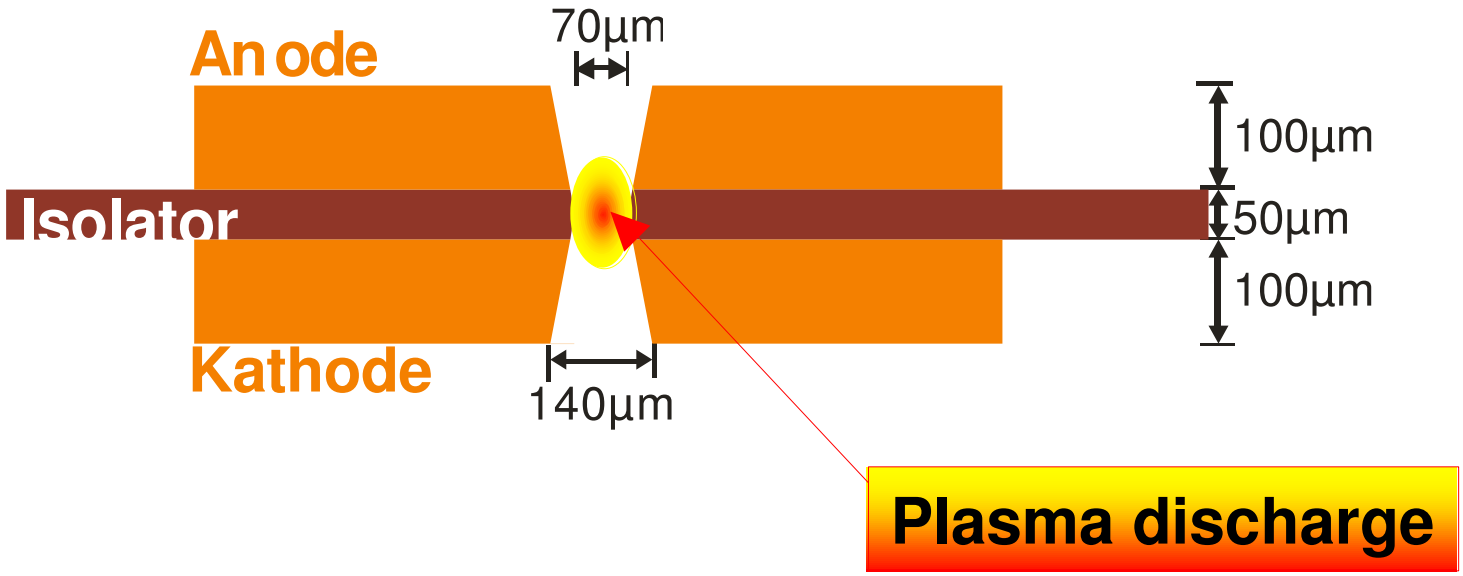
1. **Create:** Electron Impact Excitation (Plasma)
2. **Select:** (Stern-Gerlach Magnet)

Motivation

Compact Source for excited / metastable atomic beams



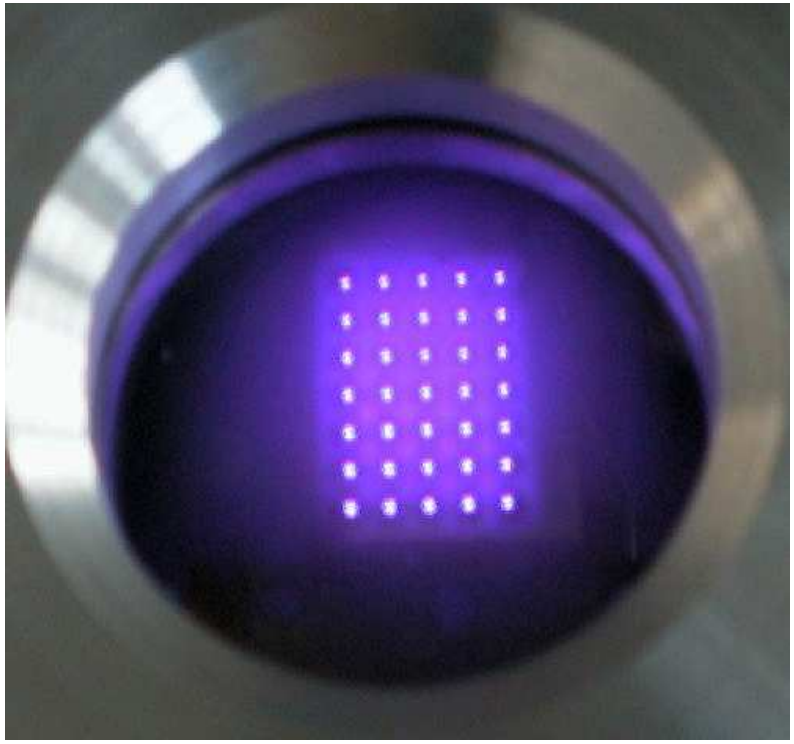
Microstructure Ion/Atom Source



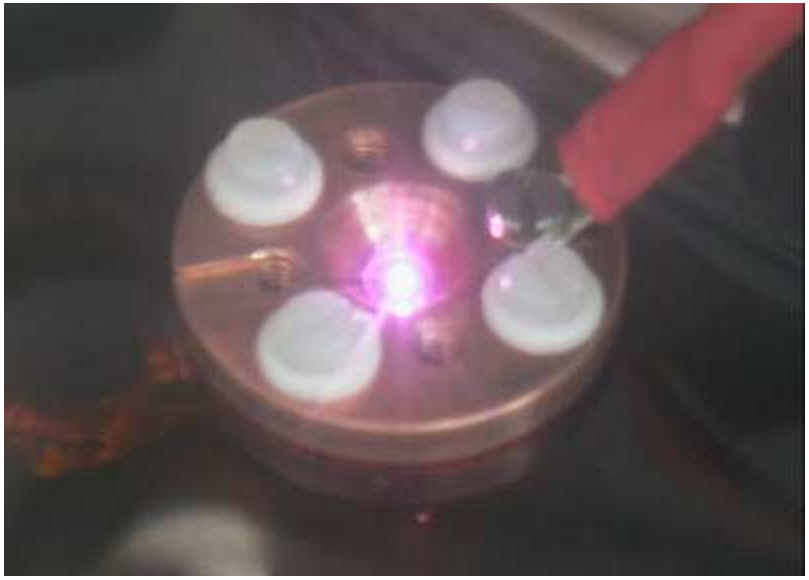
Advantage of small size:

- High pressure/low Voltage
- Very efficient
- **Nozzle for Supersonic Jet**

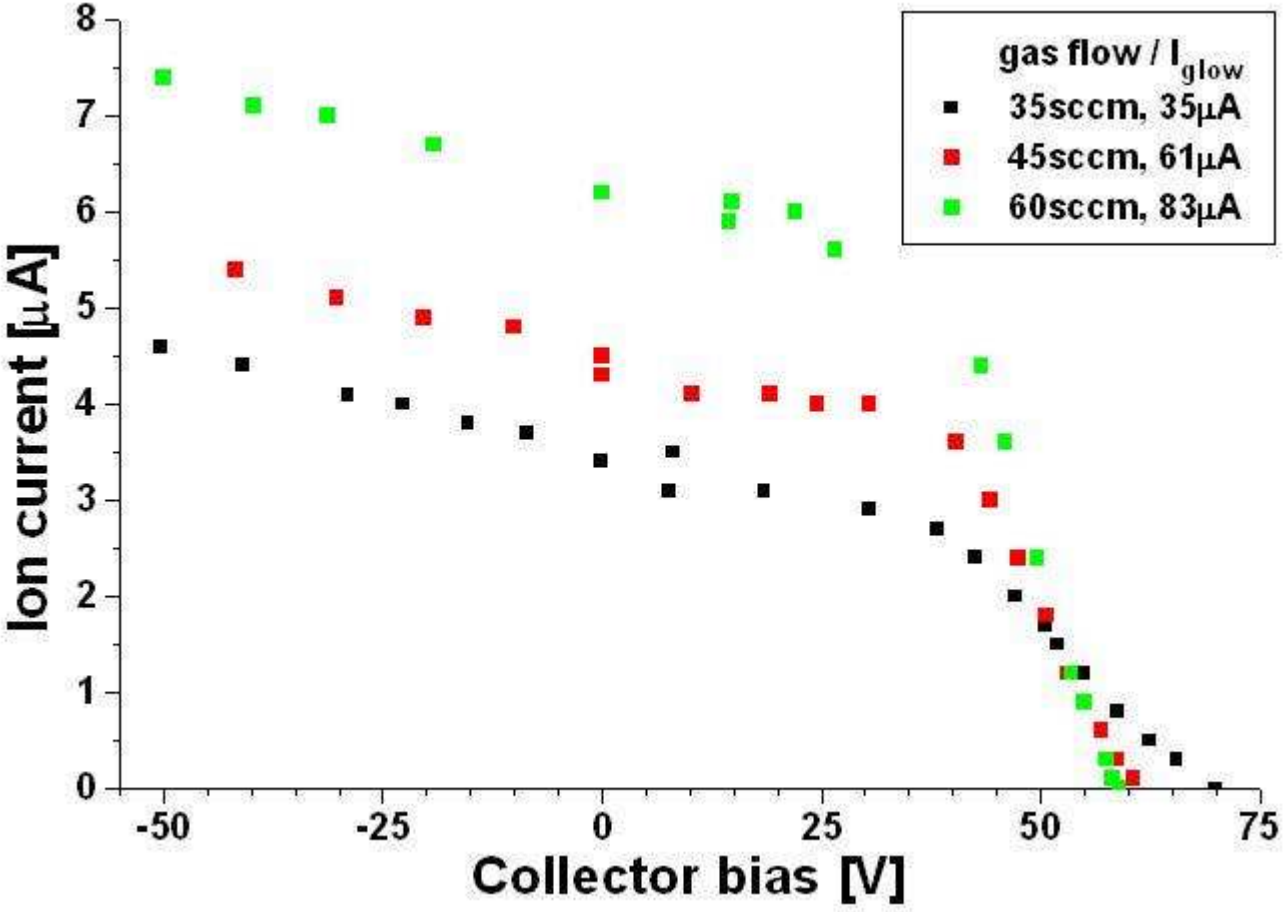
Discharge in a
Micro pore array

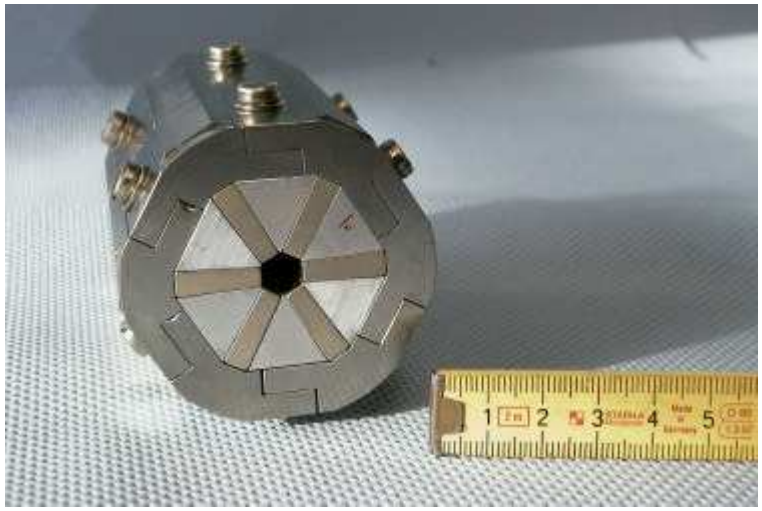


Single Pore
Gas Nozzle

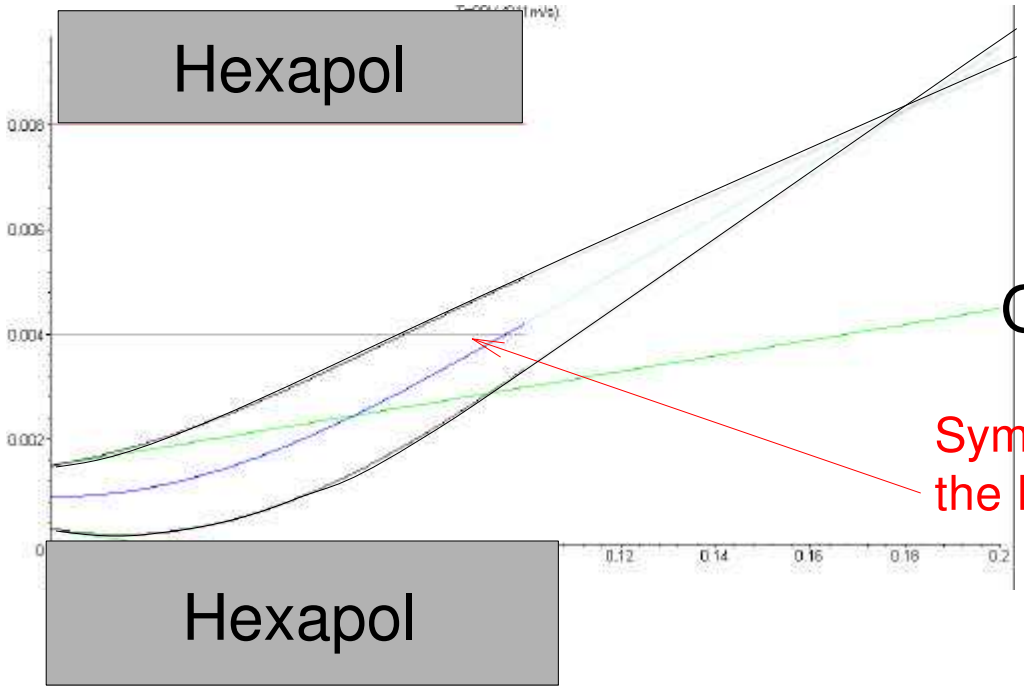


Total extracted current from one hole





[m]



Metastables
are deflected and
focussed

Ground state gas

Symmetrieaxis of
the Hexapol

z [m]

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