#### HK 36.47

## Construction of a <sup>3</sup>He gastarget and first tests\*



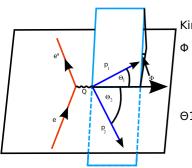


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## | | Motivation

An experiment on the exclusive <sup>3</sup>He(e, e'pp) reaction with low momentum transfer Q is planed at the S-Dalinac superconducting electron-accelarator in Darmstadt

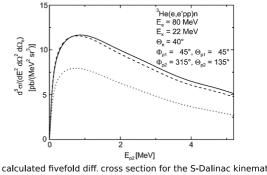


#### Kinematics

angle between the electron scattering plane and the plane including the knocked-out protons

Θ1, Θ2 angle of the knocked-out protons with respect to the direction of the momentum transfer

- ~No data for complete kinematics
- ~Probing the role of final-state interactions, meson-exchange current the 3N-forces[1,2]



calculated fivefold diff. cross section for the S-Dalinac kinematics [1]

dotted = FSI dashed = FSI + MECfull = FSI + MEC + 3NF

# 2|Requirements for the target

A concept for the target has been developed in [3].

Energy of the Protons ~10MeV thin foil gas cell

to provide proton detection

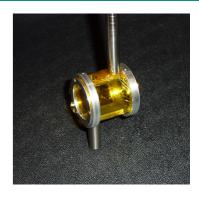
scattering rate  $\dot{N} \sim p \sim \frac{1}{T}$ 

pressure limited → low-temperature-target

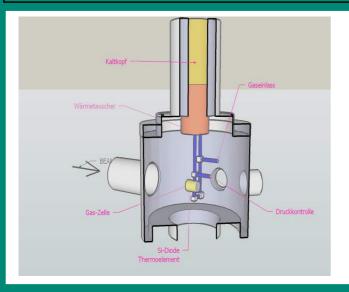
Energy deposit of the elektrons in the gas requires cooling pressure limited -> free convection

Picture of target prototype with the pipes connecting to the cooling cycle.

Target length and diameter is 3 cm



## 3 | Test-Chamber



### 5 | Outlook

Goals for a first test with electron beam (second half of 2010)

- ~measurements on the stability of the cooling system for different energies
- ~development and tests of the detector setup and electronics
- ~development of data aquisition software
- ~estimation of the required beam-time for a full experiment