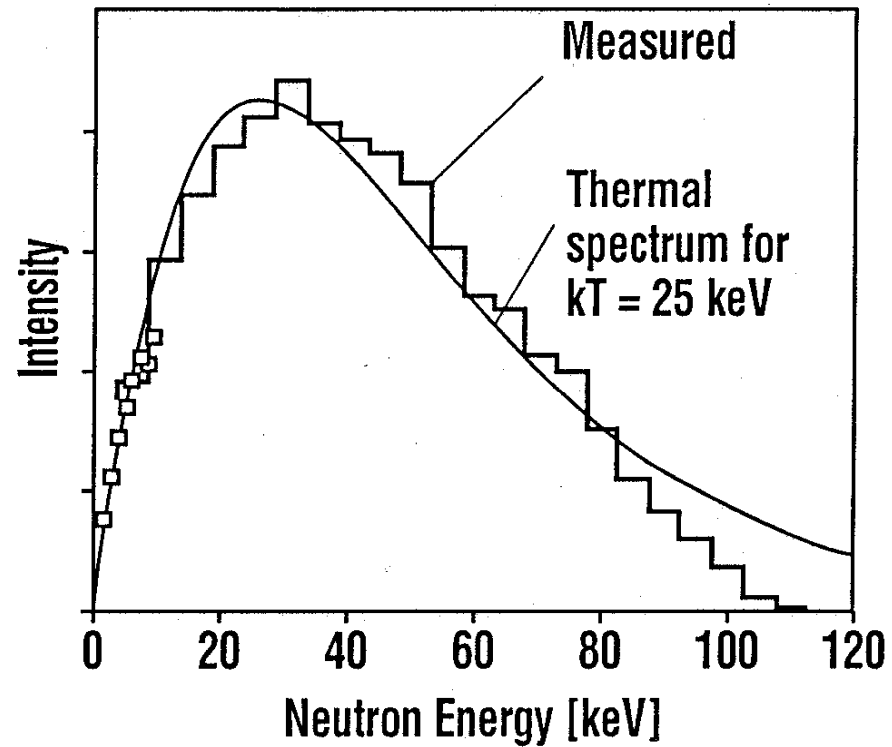
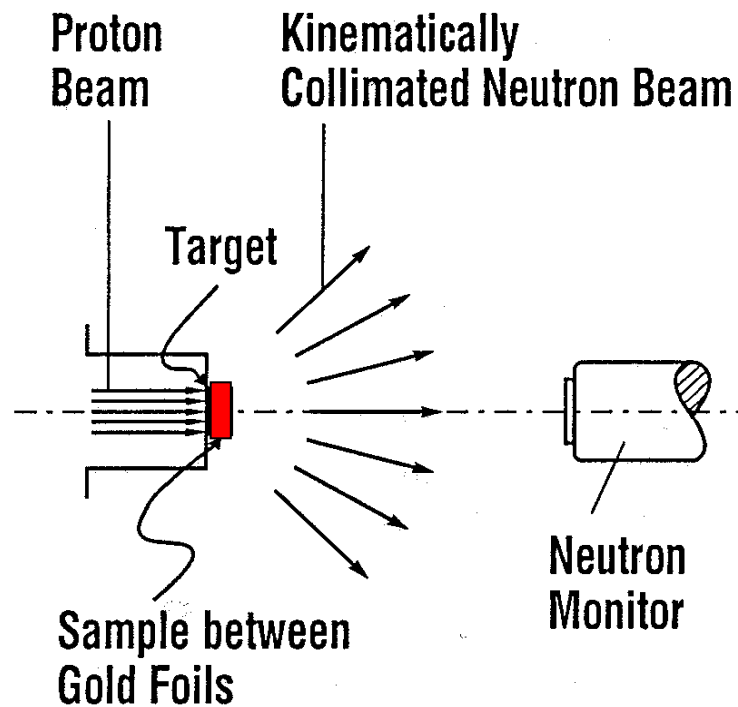


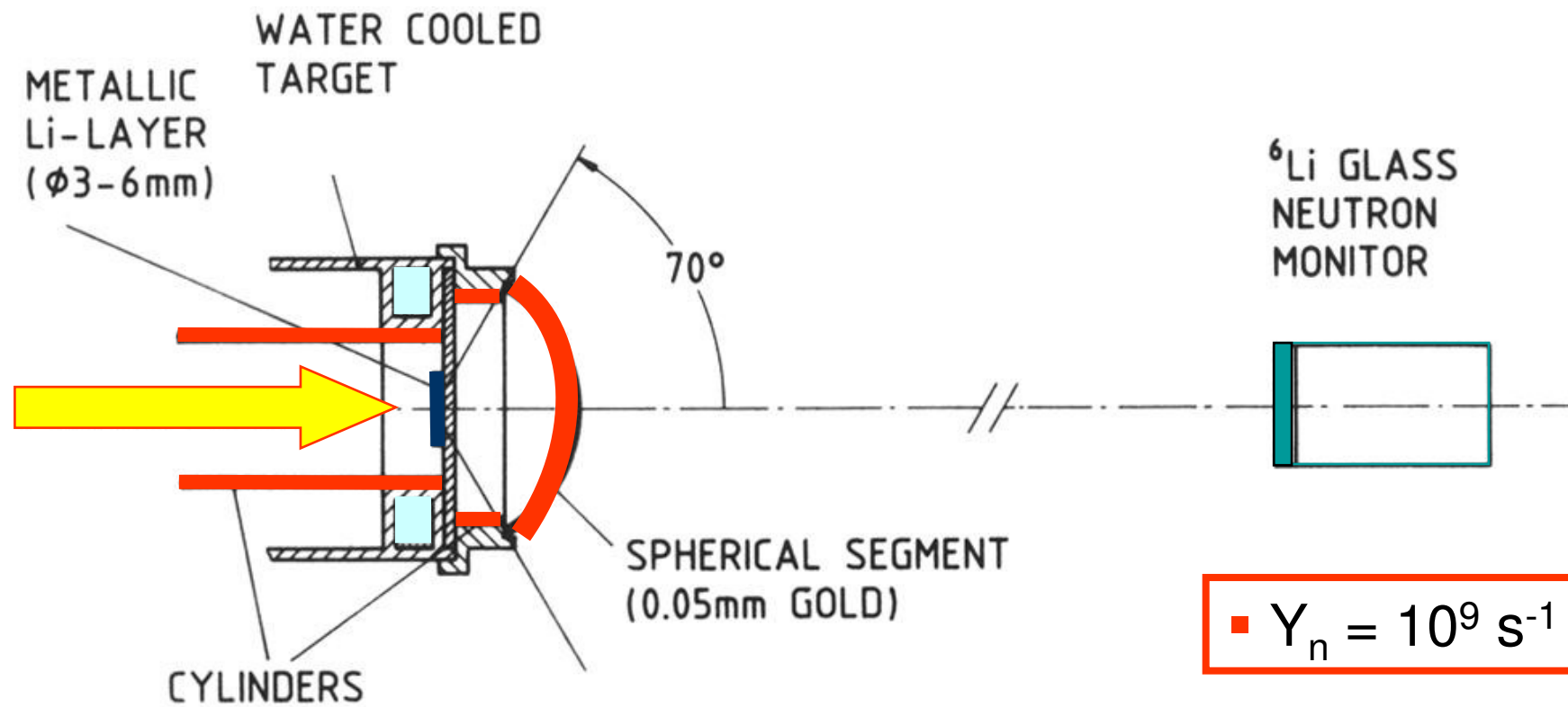
$^{197}\text{Au}(n, \gamma)$ measurement in the quasi-stellar neutron spectrum for $kT=25$ keV

- neutron production via $^7\text{Li}(p,n)^7\text{Be}$ reaction at $E_p = 1912$ keV
- induced activity measured after irradiation with HPGe detectors



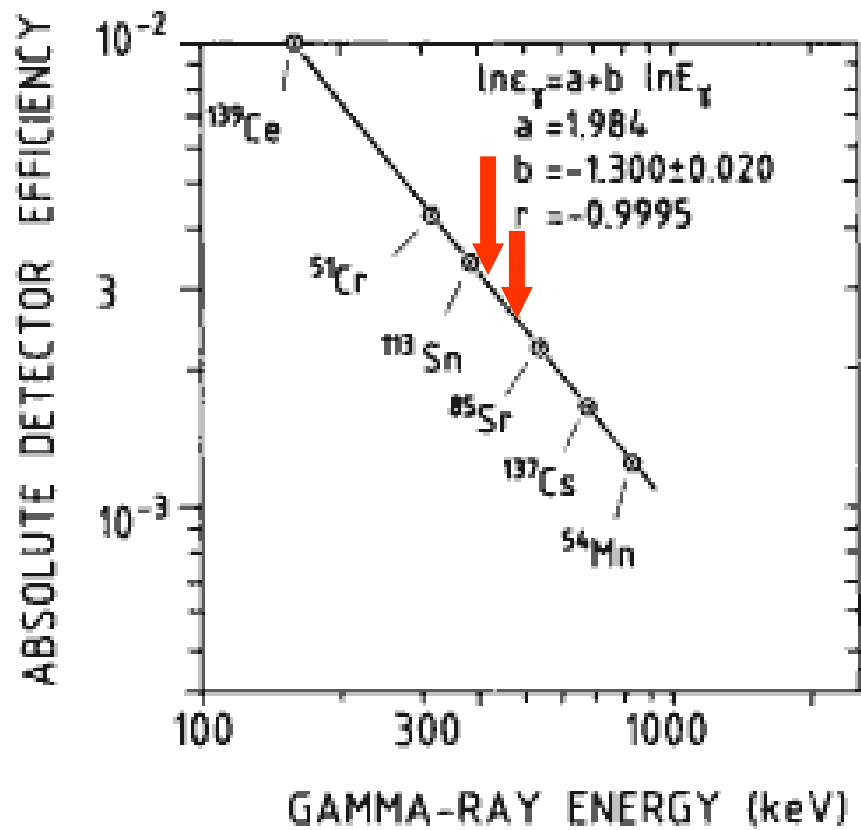
${}^7\text{Li}(p, n){}^7\text{Be}$ \longrightarrow # of neutrons = # of ${}^7\text{Be}$ atoms

- neutron sensitivity
- geometry effects
- ${}^7\text{Be}$ losses from target



comparison of ${}^{198}\text{Au}$ and ${}^7\text{Be}$ activities: γ -lines at 412 and 478 keV

induced γ -activities



systematic uncertainties

TABLE II. Systematic and statistical uncertainties.

Source of uncertainty		Related uncertainty (%)
Thickness of gold sample, N_γ		0.6
Counting statistics, C_i	Au:	0.4
	Be:	0.3
Ratio of gamma-ray efficiency, $\epsilon_\gamma(\text{Be})/\epsilon_\gamma(\text{Au})$		0.3
Solid angle for extended sources, K_Ω		0.6
Gamma-ray intensity per decay, I_γ	Au:	0.1
	Be:	0.4
Gamma-ray self-absorption, K_γ	Au:	0.3
	Be:	0.5
Neutron scattering in target, K_s		0.1–0.4
Decay rates, λ	Au:	0.1
	Be:	< 0.1
Irradiation history, time factors, f_i		negligible

Total uncertainty: 1.3 – 1.4%

average experimental cross section: 586 ± 8 mbarn

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complementing the TOF results from n_TOF and IRMM, additional activation measurements are planned at the IRMM VdG

- to repeat the measurement of Ratynski & Käppeler under modified conditions and
- to search for unrecognized systematic effects and to verify the quoted uncertainties

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