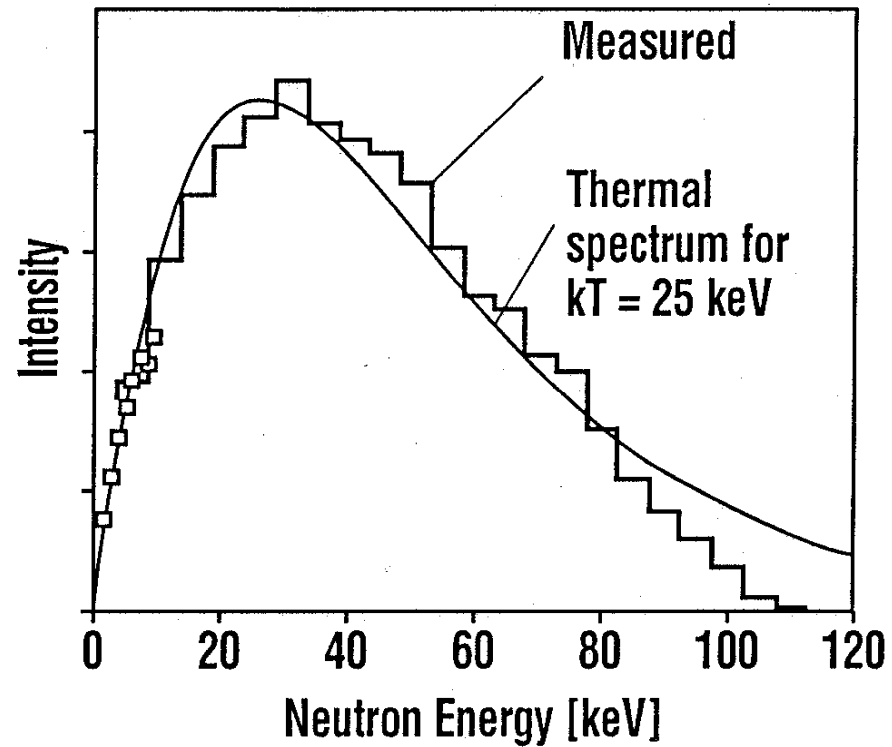
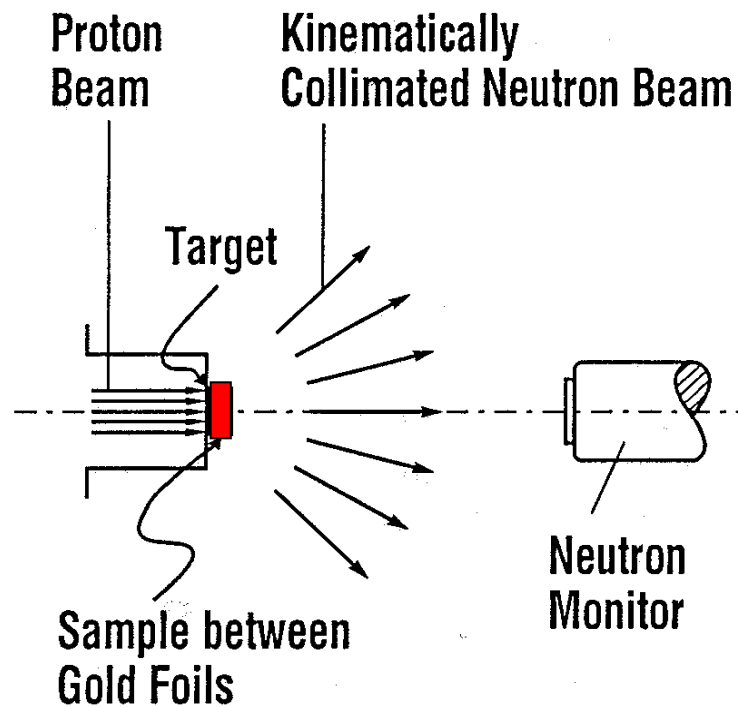


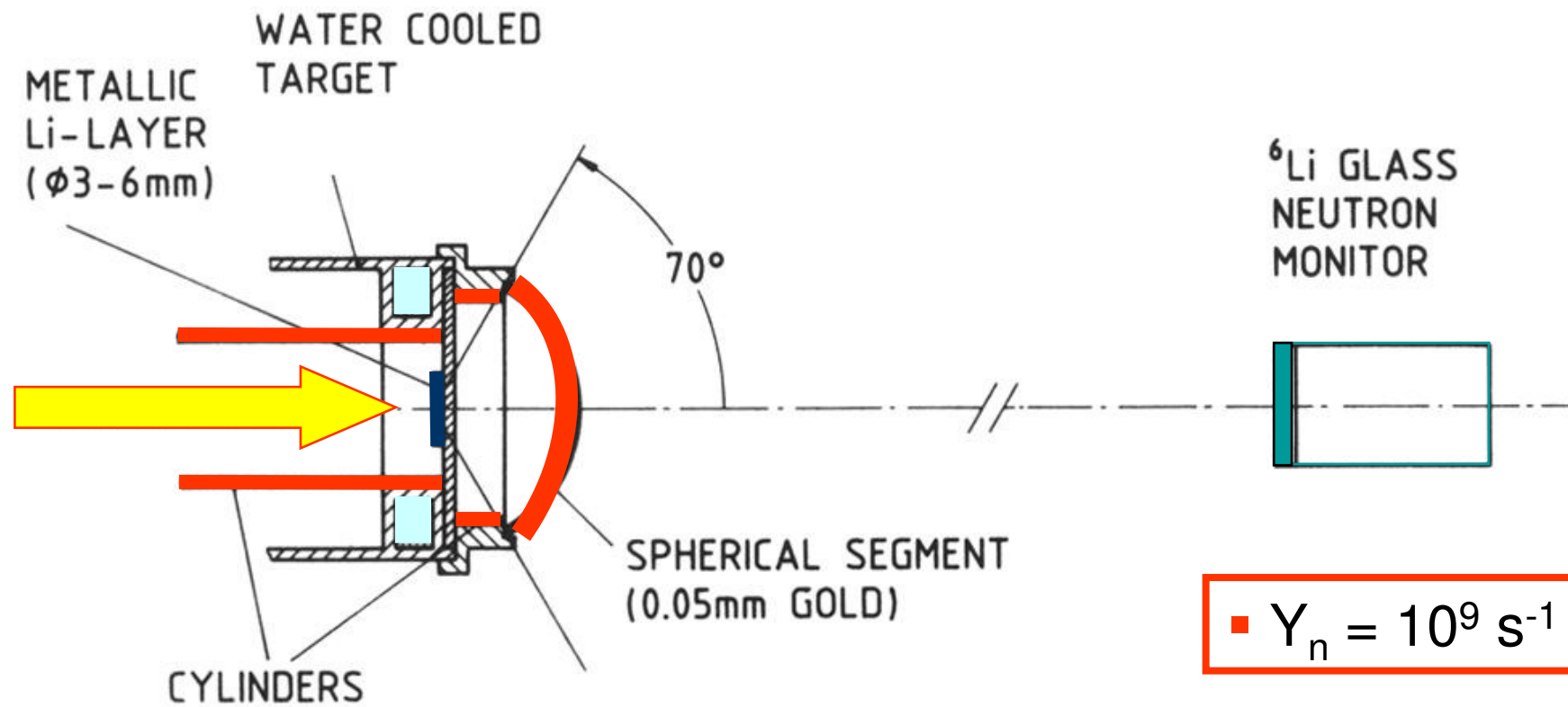
# $^{197}\text{Au}(n, \gamma)$ measurement in the quasi-stellar neutron spectrum for $kT=25$ keV

- 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



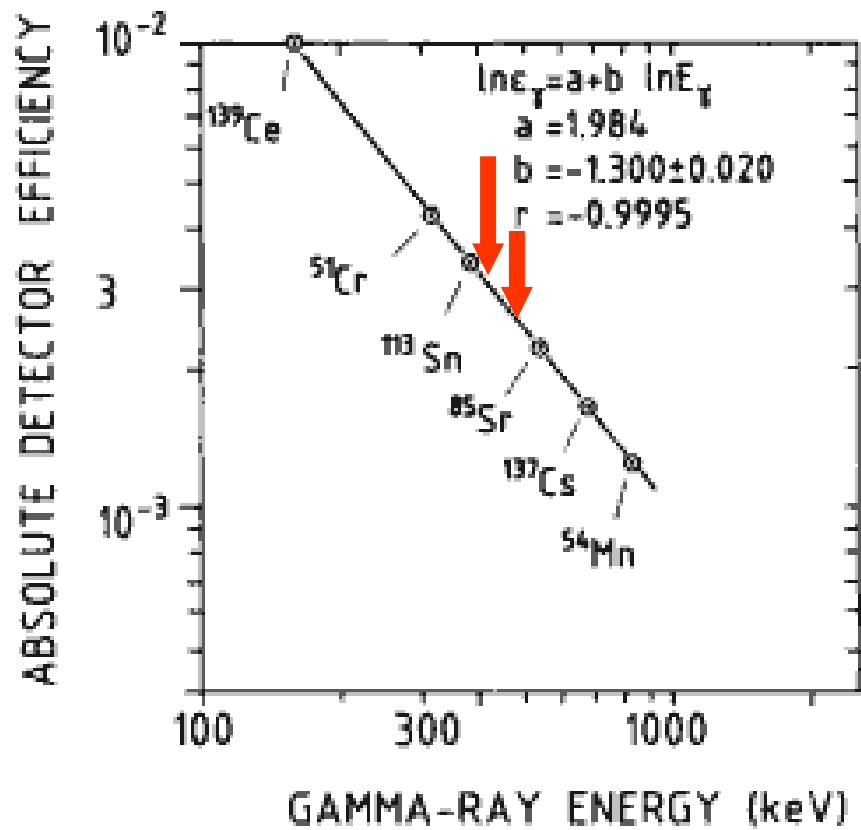
${}^7\text{Li}(p, n){}^7\text{Be}$   $\longrightarrow$  # of neutrons = # of  ${}^7\text{Be}$  atoms

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



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

# induced $\gamma$ -activities



# systematic uncertainties

TABLE II. Systematic and statistical uncertainties.

Source of uncertainty		Related uncertainty (%)
Thickness of gold sample, $N_\gamma$		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, $K_\Omega$		0.6
Gamma-ray intensity per decay, $I_\gamma$	Au:	0.1
	Be:	0.4
Gamma-ray self-absorption, $K_\gamma$	Au:	0.3
	Be:	0.5
Neutron scattering in target, $K_s$		0.1–0.4
Decay rates, $\lambda$	Au:	0.1
	Be:	< 0.1
Irradiation history, time factors, $f_i$		negligible

Total uncertainty: 1.3 – 1.4%

average experimental cross section:  $586 \pm 8$  mbarn

# EUFRAT proposal 2010

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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