

Experimental Plan – Ion Implantation / Irradiation

(Please provide a detailed description of the planned experiment including relevant technical details. Please describe your sample(s) in detail including quantity, size, composition, ... Use font Arial, 11 pt.)

Title of the proposal

Implanted ^{19}F targets for high current cross section measurement at LUNA

Main Applicant (Name, Institution, Country):

Denise Piatti, University of Padua, Italy (denise.piatti@pd.infn.it)

Co Applicant (Name, Institution, Country):

Jakub Skowronski, University of Padua, Italy (jakub.skowronski@pd.infn.it)

Ion implantation / irradiation conditions

sample name	material	Size (mm)	side	ion species	energy (keV)	fluence (cm^{-2})	temperature ($^{\circ}\text{C}$)	tilt angle ($^{\circ}$)	twist angle ($^{\circ}$)
DP1-DP3	Ta	40	front	F-19	325	7.7×10^{17}	watercooled	0	0
DP1-DP3	Ta	40	front	F-19	110	1.5×10^{17}	watercooled	0	0
DP1-DP3	Ta	40	front	F-19	45	8×10^{16}	watercooled	0	0
DP4-DP6	Ta	40	front	F-19	500	6.3×10^{17}	watercooled	0	0
DP4-DP6	Ta	40	front	F-19	200	2.5×10^{17}	watercooled	0	0
DP4-DP6	Ta	40	front	F-19	80	7.5×10^{16}	watercooled	0	0
DP4-DP6	Ta	40	front	F-19	30	4.5×10^{16}	watercooled	0	0

Further remarks

Ta foil thickness= 0.25 mm, provided by LUNA collaboration, shape and size in Fig. 1

Fe foil thickness= 0.25 mm, provided by LUNA collaboration, shape and size in Fig. 1

DP1-DP3 targets should have a final thickness of 250 nm, with 40-50% concentration of F-19

DP3-DP6 targets should have a final thickness of 510 nm, with 40-50% concentration of F-19 from 0 to 400 nm

The necessary beam is about 3 hours per sample, so for 6 samples on Ta 18-20 shifts (8 hours each) are required.

Total fluence = $10^{18} \text{ }^{19}\text{F} / \text{cm}^2$

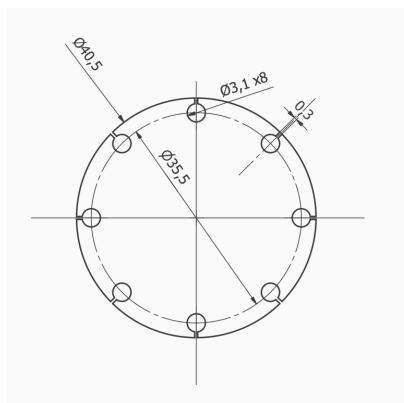


Fig.1