GANIL	Letters of intent for the DESIR facility Abstract	Spiral2 DESIR

Description

Name of spokesperson (Collaboration/Lab): Leendert HAYEN

Title: ASGARD

Abstract: The Aluminium Superconducting Grid Array for Radiation Detection (ASGARD) anticipates to perform world-first precision spectroscopy of recoiling nuclei following short-lived beta decays. It will do this using novel superconducting tunnel junction detectors operated inside a windowless dilution refrigerator that can be coupled to a room temperature beam line. As part of the first measurements, we envision stable beam commissioning and first physics measurements to constrain the top-row unitarity of the quark mixing matrix, and the presence of exotic scalar and tensor currents with the isotopes requested.

Requested beam availability in…	☐ 1-3 years	☐ 3-5 years	☐ 5-10 years

Beam (ion, energy, intensity, number of UTs – 1UT=8h) :

$^{A}_{Z}X^{1+}$	14N	Energy	25 keV
		Intensity	1E6 pps
Bunched beam: no		Freg / Length	Hz / µs
Purity	10 %	Estimated UT nb	9
$^{A}_{Z}X^{1+}$	18F	Energy	25 keV
		Intensity	1E5 pps
Bunched beam: no		Freg / Length	Hz / µs
Purity	10 %	Estimated UT nb	12
$^{A}_{Z}X^{1+}$	13N	Energy	25 keV
		Intensity	1E5 pps

Bunched beam: no		Freg / Length	Hz / µs
Purity	10 %	Estimated UT nb	12

Production site:

SPIRAL1	S3-LEB
x	

Instruments to be used (please add instrument name if missing) :

MORA	LUMIERE	TAS	PIPERADE	MLLTRAP	OTHER
					ASGARD

Other information (cooled / bunched beam, continuous beam / tape drive system / other request…) :

No need for bunched beam, but need a way to turn beam off/deflect regularly. For stable tests with 14N we would like a short implantation period every second, to see the detector recovery in real time. For radioactive we would implant for several lifetimes and then measure for several lifetimes.