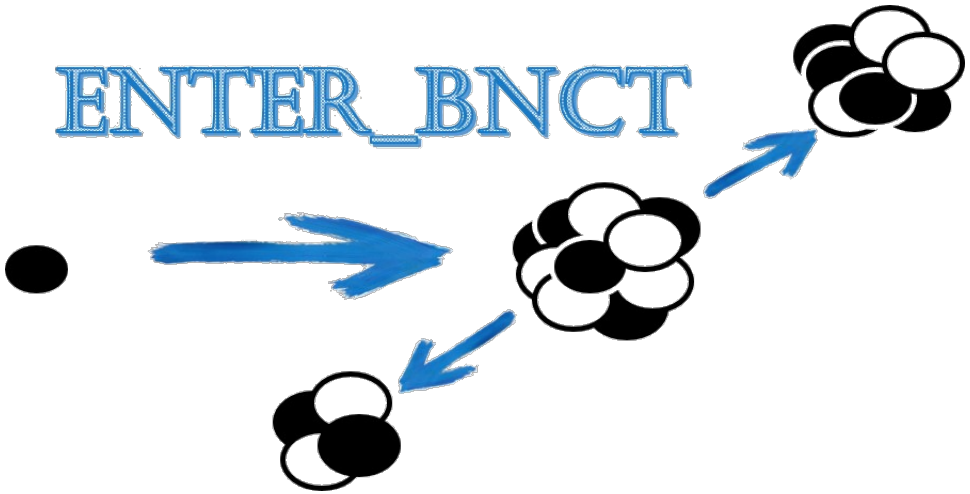

INFN PAVIA

CdS –10 July 2019

ESTABLISHING NEW TECHNOLOGIES FOR BNCT @CNAO

Filling the technology gap between research and clinical application of BNCT

THE CONTEXT

AREA A
1 room BNCT

WHY ENTER_BNCT

RESEARCH + TECHNOLOGY

Integrate expertise and technology development towards the common goal of building a clinical facility

WHO KNOWS WHAT

INFN LNL

Be target
Irradiations at CN

INFN PAVIA

BSA design
Neutron irradiation at reactor
Dosimetry
SPECT studies
Radioprotection and activation
Project of irradiation room

INFN TORINO

Irradiations at eLebans
Spectrometer development
Radiobiology

INFN LNF

Spectrometer
& Dosimetry devel

imem

CZT development

POLITECNICO MILANO

BSA testing

fondazione CNAO

Radioprotection & Dosimetry

UNITS

RN	S. Altieri

UNIT	RL	FTE
PV	S. Bortolussi	8.9
LNL	E. Fagotti	1
LNF	R. Bedogni	1.1
TO	V. Monti	1.3

PEOPLE – UNIT OF PAVIA
TOTAL FTE 8.9

Saverio Altieri PI	0.4
Silva Bortolussi RL	0.4
Nicoletta Protti	0.3
Ian Postuma	0.3
Chiara Magni	0.8
Setareh Fatemi	0.2
Chunhui Gong	0.8
Valerio Vercesi	0.2
Cinzia Ferrari	0.4
Umberto Anselmi Tamburini	0.6
Simonetta Geninatti Crich	1
Anna Maria Deagostino	1
Diego Alberti	1
Mario Ciocca	0.2
Michele Ferrarini	0.2
Stefano Agosteo	0.1
Manuele Bettelli	0.3
Nicola Sarzi Amadè	0.3
Andrea Zappettini	0.2
Davide Calestani	0.2

WHAT

WP1 Production of neutrons in a newly designed, efficient beryllium target - LNL

WP2 Construction and characterization of a Beam Shaping Assembly prototype (PV-LNF-TO-LNL)

WP3 Diagnosis of the beam for quality assurance and dosimetric evaluations in beam (LNF-TO)

WP4 Study of the patient positioning systems and irradiation room installations (PV)

WP5 Boron concentration measurements for clinical application and intra-cellular evaluation of B distribution (PV)

WP6 On-line dosimetry system based on SPECT to be installed in the treatment room (PV)

WHEN

	S1	S2	S3	S4	S5	S6
W1				Target *		
W2				BSA prototype *		
W3		Spectrometer *				
W4						
W5		Intracellular technique *		PGNAA *		
W6						CZT ring *

DELIVERABLES

Thin beryllium Target

BSA prototype

Spectrometer wide-range and compact sensors for in phantom measurements

10B concentration measurements protocols for clinical applications

Project of irradiation room set-up

Prototype ring of CZT detector for SPECT dose monitoring for small animals.

BUDGET + SERVICES 2020

	PV	LNL	TO	LNF
Consumables	20			
Travels	8			
Transports	-			
Services	10			
Construction	-			

TBD

TBD

SERVIZI: 2 mesi-uomo officina meccanica
1 mese uomo officina elettronica