

FRIDA

**FLASH Radiotherapy with high Dose rate
particle beams**

M.G. Bisogni

Preventivi 2023 INFN Pisa

1/7/2022



Call CSN5 2021

Research area

Radiation biophysics / Radio Therapy /
Particle Therapy / Medical Applications /
Accelerator science

Sezioni partecipanti

7 (24 FTE + 10 annualita' Ass Ric)
CT , LNS , MI , PI , Roma1, TIFPA , TO
Budget: 996 kEU

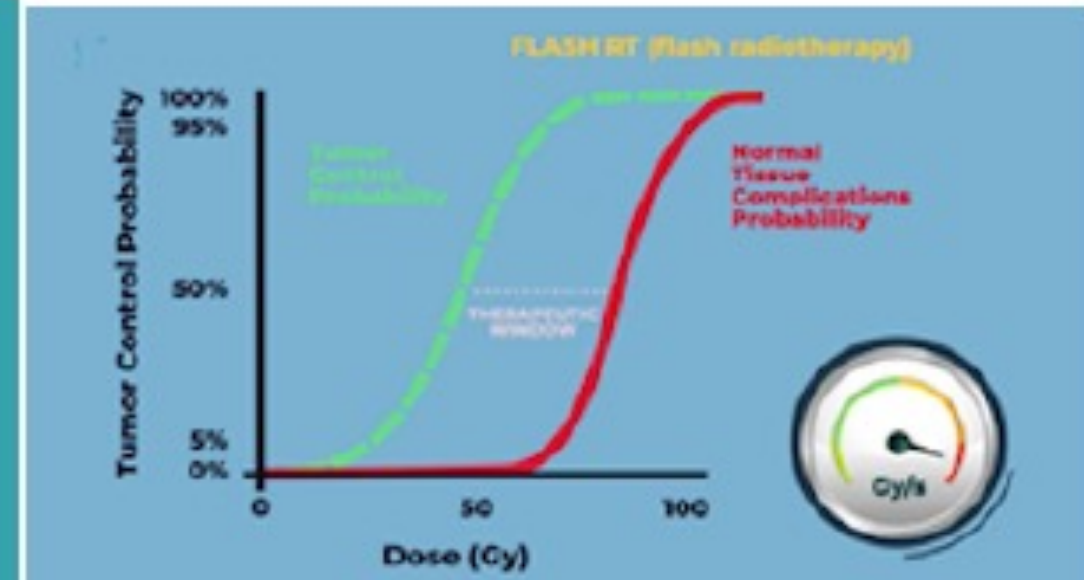
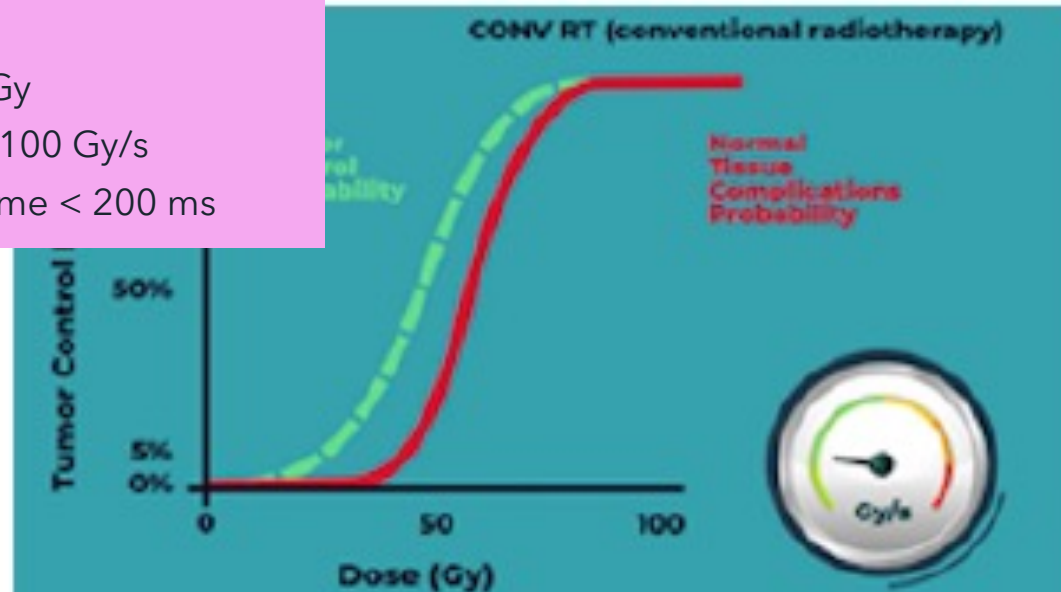
Responsabile Nazionale

Alessio Sarti, INFN Roma1



FRIDA Brief Description and Objectives

- FLASH dosimetric parameters:
 - Dose ~ 10 Gy
 - Dose rate > 100 Gy/s
 - Irradiation time < 200 ms



- Understanding the FLASH effect mechanism (WP1)
- Acceleration and beam delivery (WP2)
- Beam monitoring and dosimetry (WP3)
- Simulation and treatment optimization (WP4)

FRIDA: Progress and Objectives 2023

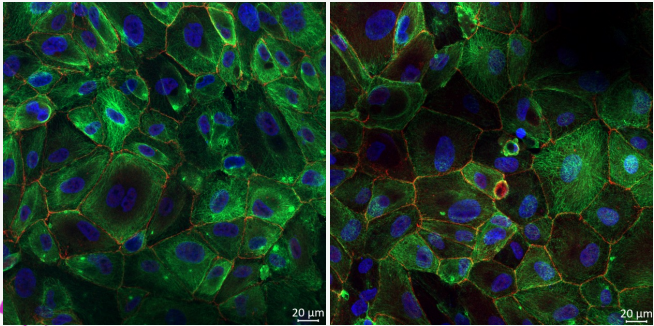
WP1

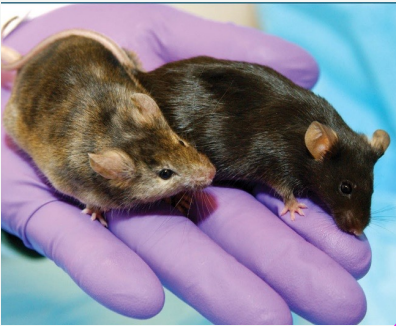
FLASH

Conventional

Retina cells

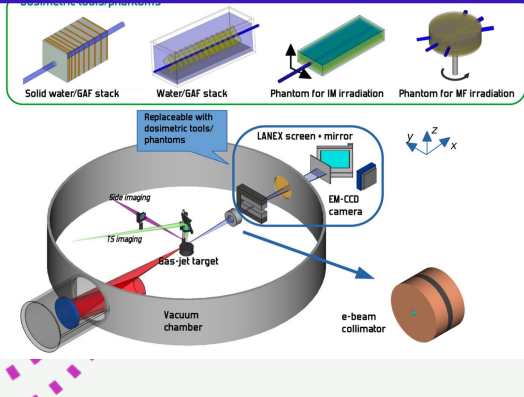
In Vivo Irradiations

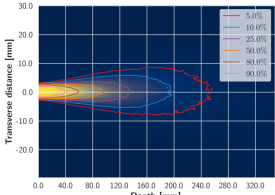


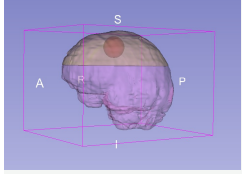


WP2

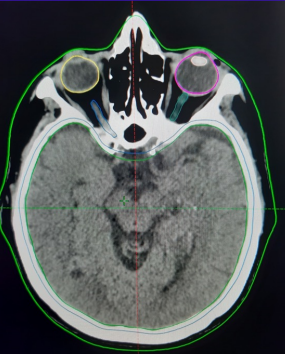
optimization of the collimation system for beamlet shaping;







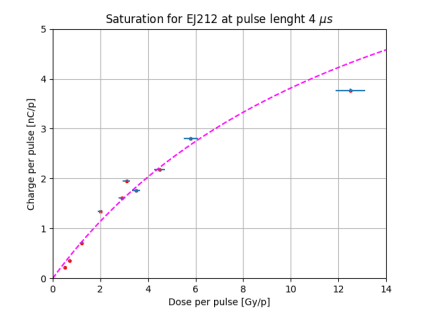
WP4



Clinical cases
brain metastases for
panencephalic treatment
primary neoplasm of the
brain

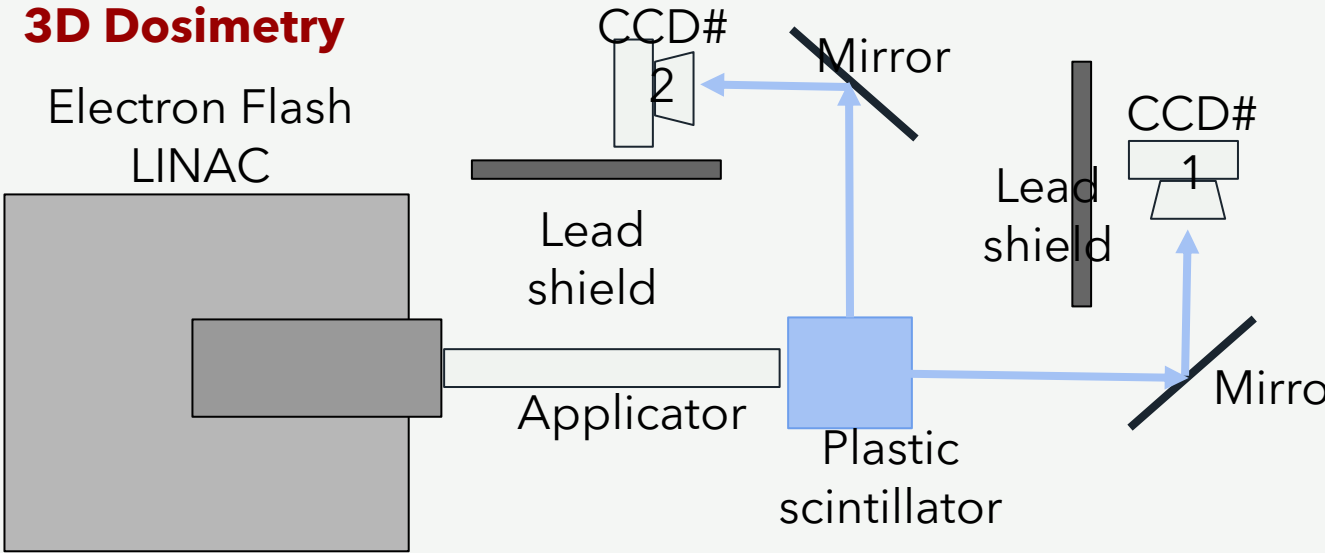
WP3





3D Dosimetry

Electron Flash LINAC



E. Ciarrocchi



Richieste Servizi Sezione

Progettazione meccanica (0.1 FTE), Officina
meccanica (0.1 FTE)

Alte Tecnologie (0.1 FTE)

Elettronica (0.1 FTE)

costruzione dei dosimetri

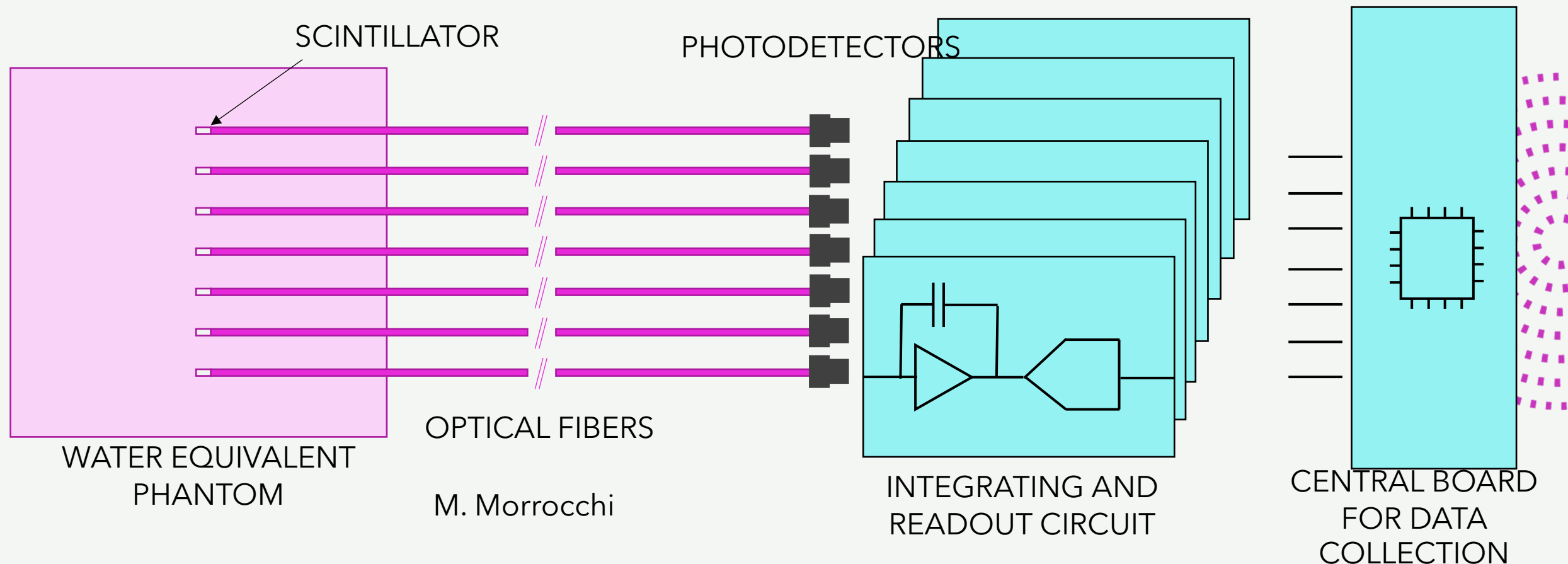
consulenza progettazione schede di lettura

supporti meccanici per gli esperimenti rad-bio.

Maurizio Massa

Andrea Moggi

Fabio Morsani



Anagrafica

Cognome Nome	Posizione/Ente	% FTE	WP
Belcari Nicola	PA UNIFI	0.1	3
Bisogni Maria Giuseppina	PA UNIFI	0.4	3
Ciarrocchi Esther	RTD UNIFI	0.4	3
Del Sarto Damiano	Spec UNIFI/CNR	0.2	2
Di Martino Fabio	Dir AOP	0.2	3
Gizzi Leonida	Dir CNR	0.2	2
Kraan Aafke	Ric INFN	0.1	4
Labate Luca	Ric CNR	0.2	2
Marasciulli Andrea	PhD UNIFI	0.5	2
Montefiori Marco	PhD UNIFI	1.0	3
Morrocchi Matteo	RTD UNIFI	0.2	3
Pensavalle Jake	Ass Ric INFN	0.8	3
Rosso Valeria	PO UNIFI	0.1	4
Sportelli Giancarlo	PA UNIFI	0.1	3
Stretto Emilia	Ric CNR	0.1	1
Vannini Elisa	Ric CNR	0.1	1

Fabiola Paleari AOP e UNIFI
Mario Costa CNR
Stefano Ursino AOP e UNIFI

Totale 3.6 FTE

Richieste finanziarie INFN Pisa

Cost Category	Item	I anno	II anno	III anno	Totale	WP
Personnel	1 contratto per 2 anni (Pisa)	€ 28,400.00	€ 28,400.00		€ 56,800.00	3
	Animals		€ 4,000.00	€ 4,000.00	€ 8,000.00	1
Consumables	Scintillators and photodetectors	€ 4,000.00	€ 4,000.00		€ 8,000.00	3
	Reagents	€ 3,000.00	€ 3,000.00	€ 2,000.00	€ 8,000.00	1
	Optics and electronics for Laser driven VHEE	€ 3,000.00	€ 3,000.00		€ 6,000.00	2
Instrumentation	DAQ for scintillators		€ 7,000.00		€ 7,000.00	3
	GPU board for PIC simulations	€ 14,000.00			€ 14,000.00	2
Travels	Travels (Pisa)	€ 2,000.00	€ 3,000.00	€ 3,000.00	€ 8,000.00	1-4
		€ 54,400.00	€ 52,400.00	9000		
				Total	€ 115,800.00	