

# Gruppo 5

Andrea Chincarini

# attività in chiusura

- Magnet technology

- **LAPUTA**

- RN R. Musenich
  - Magneti spaziali per schermatura di detectors su satellite

- Interdisciplinary & applied

- **nextMR**

- RN A. Chincarini
  - Data analisi applicata alla medicina (neuroimmagini)

# attività 2019

## ● Magnet technology

- **promoD2**
  - RN P. Fabbricatore
    - modello e prototipo di magneti per acceleratori ad alto campo
- **EUROCIRCOL**
  - RL S. Farinon
    - progettazione dipolo a 16 T
- **FALCON**
  - RN P. Fabbricatore
    - costruzione del modello di magneti EUROCIROCOL (sigla e collocazione ancora da definire)
- **BISCOTTO**
  - RN R. Musenich
    - technologies and hi-T superconducting cables for tilted solenoids

## ● Detectors

- **TIMESPOT [call CSN5]**
  - RL E. Robutti
    - dimostratore di tracciante contenente 3 o più strati di rivelazione
- **KIDS\_RD**
  - RL S. Di Domizio
    - Microcalorimetri criogenici basati su sensori Kinetic Inductance

## ● Interdisciplinary & applied

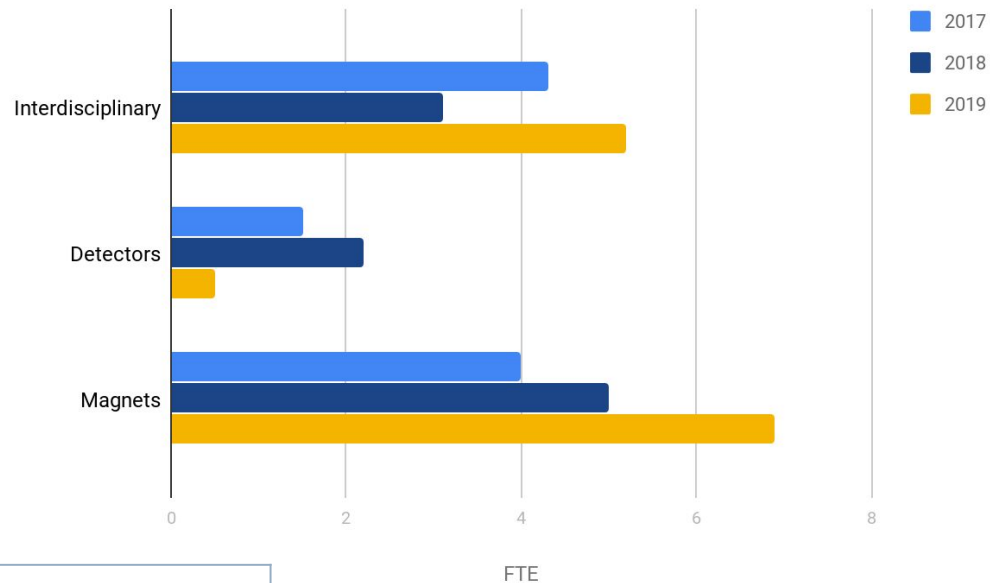
- **TRACCIA / EUROCHAMP**
  - RL D. Massabò
    - Aerosol characterization
- **AIM**
  - RL A. Chincarini
    - network of expertise in applied data analysis
- **FLAGS [call CSN5]**
  - RN F. Sorrentino
    - gravimetric sensors with atomic fountains

# personale

<a href="#">Buatier De Mongeot Francesco</a>	Prof. Associato
<a href="#">Caiffi Barbara</a>	Tecnologo
<a href="#">Chincarini Andrea</a>	Ricercatore
<a href="#">Cirone Alessio</a>	Dottorando
<a href="#">Di Domizio Sergio</a>	Ricercatore Tempo Determinato Tipo B
<a href="#">Massabo' Dario</a>	Ricercatore Tempo Determinato Tipo A
<a href="#">Musenich Riccardo</a>	I Ric.
<a href="#">Prati Paolo</a>	Prof. Associato
<a href="#">Ravera Fabio</a>	Assegnista
<a href="#">Robutti Enrico</a>	Ricercatore
<a href="#">Sorrentino Fiodor</a>	Ricercatore

<a href="#">Bersani Andrea</a>	Tecnologo
<a href="#">Fabbricatore Pasquale</a>	Dir.Tecn.
<a href="#">Farinon Stefania</a>	I Teen.
<a href="#">Roberto Cereseto</a>	CTER

Danelli Silvia Giulia	Assegno di ricerca
Pampaloni Alessandra	Assegno di ricerca



# progetti legati ad attività / personale Gr5 (2019+)

- **DORIAN [ CNTT R4I ]**
  - Servizi per diagnostica avanzata su infrastruttura distribuita
    - GE / PI
    - RN A. Chincarini
- **PAPAIA [ PRIN ]**
  - Metodi di analisi basati su AI per astronomia con GW
    - INFN / UniPI / UniBO / UniSS
    - PI M. Punturo (PG)
- **CUBISM [ PRIN ]**
  - Progettazione e realizzazione di un magnete “tilted solenoid”
    - INFN / UniBO / UniMI / CNR
    - PI P. Fabbriatore
- **TOPMED [ H2020 ]**
  - Infrastructure for personalized medicine
    - INFN GE-PI-CNAF / EU partners
    - PI INFN A. Retico / Chincarini
- **ACTRIS [ PON ]**
  - Aerosol Clouds and Traces gases.research infrastructure Network
    - CNR / INFN
- **RHAPS [ PRIN ]**
  - Redox activity and health effects of atmospheric primary and secondary aerosol
    - CNR / INFN
- **bando BIOUPPER Novartis/Cariplo**
  - Quantificazione e report su imaging PET
    - GE / PI / MI
    - RN F. Sensi
- **BRAMY [ PRIN ]**
  - Quantification of amyloid PET
    - UniGE / UniPD / UniRM / UniPG / UniFI / INFN
- **RicercaFinal. [ Mds ]**
  - Remyelination of patients with Multiple Sclerosis
    - UniGE / IRCCS S. Martino / INFN

# richieste a servizi

Esperimento	mesi-uomo			
	Progettazione	Officina	Elettronica	Calcolo
PROMOD2	2	3		
EUROCIRCOL	2	3		
TRACCIA/EUROCHAMP		3		
BISCOTTO/CUBISM [PRIN]	1	3		
AIM				1
FLAGS [CALL Gr5]	2	2	2	
DORIAN [CNTT]				2
ACTRIS [PON]		2		
RHAPS [PRIN]		1		
<b>Totale</b>	<b>4 (3)</b>	<b>9 (8)</b>	<b>(2)</b>	<b>(3)</b>

■ to be approved. Scale dei tempi non ovvie (per es. PRIN) → impatto su servizi solo indicativo

attività in chiusura

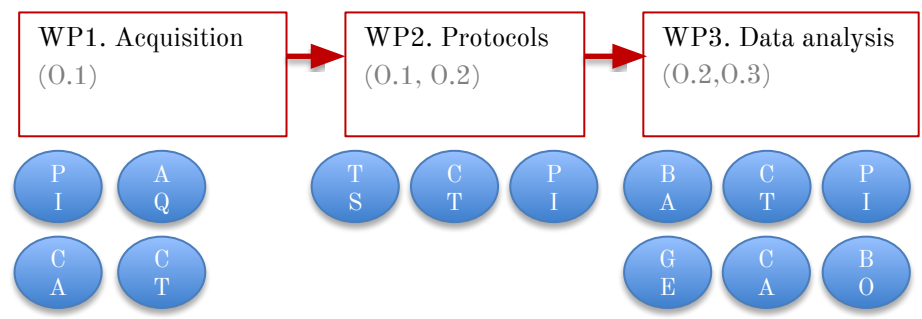
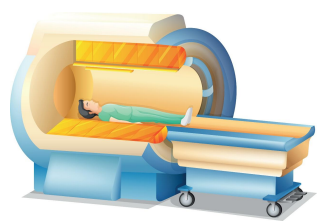
nextMR  
LAPUTA



- .1: MRI techniques: disease-specific image enhancement through dedicated acquisition modality and instrumentation
- .2: Connectomics, brain network studies, lesion characterization
- .3: Enhanced MRI-driven biomarkers in the measure of the neurodegeneration process

### Advancing Magnetic Resonance Imaging and Data Analysis

CSN5 2015 - 2017



- Genova (A. Chincarini, RN)
- Pisa (A. Retico)
- Trieste (R. Longo)
- Bologna (D. Remondini)
- L'Aquila (M. Alecci)
- Cagliari (P. Oliva)
- Bari (S. Tangaro)
- Catania (M. Marrale)

56 persone 22.2 FTE





	Title	Browse	Cls.
1	Standardized evaluation of algorithms for computer-aided diagnosis of dementia...	NEUROIMAGE, 11s, (2015)	58
2	Deep feature extraction in Hippocampal Volume Segmentation...		
3	Predictive Models Based on Support Vector Machines for Alzheimer's Disease...		
4	Investigation of network local search for Alzheimer's disease diagnosis...		
5	Evaluation of 3D multi-frequency elastography for brain tissue characterization...		
6	STEAM-MTD: An MR Spectroscopy Tool for Alzheimer's Disease Diagnosis...		
7	Feature Selection Based on Network Structure for Alzheimer's Disease Diagnosis...		
8	An Hippocampal Segmentation Tool for Alzheimer's Disease Diagnosis...		
9	Multiple RF classifier for the hippocampal volume segmentation...		
10	Hippocampal unified multi-scale network for Alzheimer's disease diagnosis...		
11	First tests for an online treatment monitoring system for Alzheimer's disease...		
12	Need-to-need comparison of semi-supervised learning for Alzheimer's disease diagnosis...		
13	Structural MRI-independent semi-supervised learning for Alzheimer's disease diagnosis...		
14	Model Temporal Lobe High Resolution MRI for Alzheimer's Disease Diagnosis...		
15	PPAR $\gamma$ modulates and gamma $\delta$ in Alzheimer's disease...		
16	Targeting CACER1 on breast cancer stem cells...		
17	Nutrient antagonist triggers autophagy in breast cancer stem cells...		
18	Real-time temperature map for Alzheimer's disease diagnosis...		

67 papers on peer-reviewed journals

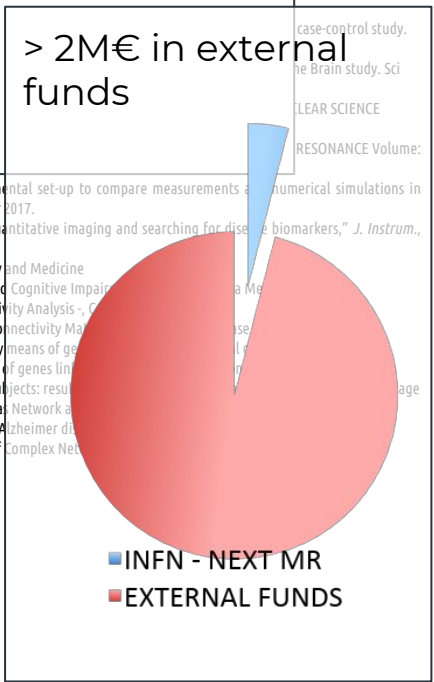
106 participation to international conferences (27 invited)

1 patent (INFN-GE)

10 degree thesis / 6 PhD

	Title	Browse	Cls.
1	Hybrid k-space: a new approach for MRI reconstruction...	PHYS MED BIOC, 61-11, (2016)	3
2	Quantitative estimation of cognitive decline and resilience in Alzheimer's disease...	ALZHEIMERS DEMENT, 10-6, (2016)	19
3	Automated hippocampal segmentation in 3D MRI using random undersampling with boost...	PATTERN ANAL APPL, 19-2, (2016)	3
4	MRI analysis for hippocampal segmentation on a distributed infrastructure...	2016 IEEE INTERNATIONAL SYMPOSIUM ON BIOMEDICAL AND HEALTH CARE INFORMATION SYSTEMS (ISBI)	0
5	Integrating longitudinal information in hippocampal volume measurements for the diagnosis of Alzheimer's disease...	NEUROIMAGE, 125, (2016)	14
6	The effect of gender on the neuromaturation of children with autism spectrum disorder...	MOL. AUTISM, 7, 5 (2016)	14
7	Rehabilitative interventions and Brain Plasticity in Autism Spectrum Disorders...	FRONT NEUROSCIENCE, 10, 139 (2016)	5
8	Temporal lobe connects regression and monocephaly to autism spectrum disorders...	EUR CHILD ADOL ESC PSY, 25-4, (2016)	4
9	Probability of conversion to Alzheimer's dementia (PCD) in long-term non-converte...	EUR J NUCL MED MOL I, 43, (2016)	0
10	EPiRabazine dosimetry for two therapeutic proton beams...	NUCL INSTRUM METH B, 368, (2016)	7
11	Predicting the transition from normal aging to Alzheimer's disease: A statistical...	NEUROIMAGE, 141, (2016)	8
12	Standardized Urinary Value Ratio-independent Evaluation of Brain Amyloidosis...	ALZHEIMERS DIS, 54-4, (2016)	4
13	One-Class Support-Vector Machines Identify the Language and Default Mode Regions...	FRONT NEUROSCIENCE, 10, 306 (2016)	2
14	SAF production in adults and children by combining measured B1+maps and simulat...	J MAGN RESON IMAGING, 44-4, (2016)	3
15	Computer Aided Detection System for Prediction of the Malaise during Hemodialysis...	COMPUT MATH METHOD M, 8748156 (2016)	1
16	Mutator A Puzzling Tool in Cancer Diagnostics and Therapy...	ANTI-CANCER RES, 36-11, (2016)	20
17	Paraoxime Phorbol-Activated Receptors in Female Reproduction and Fertility...	PPAR RES, -, 401230X (2016)	1
18	Glucosylated Stem Cells Microenvironment: The Paracrine Roles of the Niche in Dr...	STEM CELLS INT, -, 0609105 (2016)	13
19	Nitric Oxide Chemical Donor Affects the Early Phases of In Vitro Wound Healing Process...	J CELL PHYSIOL, 231-10, (2016)	0
20	The PPAR $\gamma$ modulates Agmatine (OMTDC) Induces Early Neuronal Maturation of Cortical...	J CELL PHYSIOL, 231-1, (2016)	1

- EMERGING TOPICS AND PRACTICAL ASPECTS FOR AN APPROPRIATE USE OF AMYLOID PET (J Nucl Med Molec Imaging)
- Metabolic Correlates of Reserve and Resilience in MCI due to Alzheimer's Disease (Alzheimer's Research & Therapy)
- Presynaptic dopaminergic imaging in REM sleep behavior disorder: a systematic review and meta-analysis. (Sleep Medicine Reviews)
- Morbelli, ..., Chincarini, et al., 18F-FDG PET diagnostic and prognostic patterns do not overlap in Alzheimer's disease (AD) patients at the mild cognitive impairment (MCI) stage, (2017) European Journal of Nuclear Medicine and Molecular Imaging, 44 (12), pp 2073-2083.
- Pagani, ..., Chincarini, A., et al., Early identification of MCI converting to AD: a FDG PET study, (2017) European Journal of Nuclear Medicine and Molecular Imaging, 44 (12), pp. 2042-2052.
- Bosco, ..., Chincarini, A., et al., The impact of automated hippocampal volumetry on diagnostic confidence in patients with suspected Alzheimer's disease: A European Alzheimer's Disease Consortium (EADC) study, (2017) European Journal of Nuclear Medicine and Molecular Imaging, 44 (12), pp. 2084-2092.
- 18F-FDG PET data
- Individuals Across the Spectrum of Cognitive Impairment, (2018) Journal of Alzheimer's Disease, 64, pp. 101-110.
- Case-control study. The Brain Study. Scientific Data, 5, 150115 (2016)
- LEAR SCIENCE
- RESONANCE Volume: 10, Issue: 1, 2017
- Experimental set-up to compare measurements of numerical simulations in Magnetic Resonance Imaging RF dosimetry", IEEE Transaction on Instrumentation and Measurements, Mar 2017.
- A. Retico, "Technological challenges in Magnetic Resonance Imaging: enhancing sensitivity, moving to quantitative imaging and searching for disease biomarkers," J. Instrum., vol. 13, no. 2, pp. C02007-C02007, Feb. 2018.
- T. Maggipinto, R. Bellotti, ..., S. Tangaro DTI measurements for Alzheimer classification - Physics in Biology and Medicine
- S. Tangaro, A. Fanizzi, N. Amoroso, R. Bellotti A fuzzy-based system reveals Alzheimer's Disease onset in Mild Cognitive Impairment: A Machine Learning Approach
- A. Lombardi, S. Tangaro, R. Bellotti, et al., A Novel Synchronization-based Approach for Functional Connectivity Analysis, Magnetic Resonance Imaging
- J. Rasero, ..., Sabina Tangaro, Roberto Bellotti, et al., Multivariate Regression Analysis of Structural MRI Connectivity Metrics for Alzheimer's Disease Diagnosis
- P. Da Pelo; ..., Bellotti, Roberto; Tangaro, S. Trial latencies estimation of event-related potentials in EEG by means of gene length
- A Monaco, ..., Sabina Tangaro, Roberto Bellotti-A complex network approach reveals a pivotal substructure of the brain connectivity network in Alzheimer's disease
- N. Amoroso, ..., Roberto Bellotti, Sabina Tangaro Deep learning reveals Alzheimer's disease onset in MCI subjects: resting state functional connectivity network analysis
- N. Amoroso, ..., Sabina Tangaro, Alzheimer's disease diagnosis based on the Hippocampal Unified Multi-Atlas Network
- N. Amoroso, D. Diacono, M. La Rocca, R. Bellotti, S. Tangaro, Salient networks: a novel application to study Alzheimer's disease
- E. Lella, ..., S. Tangaro Communicability disruption in Alzheimer's disease connectivity networks, Journal of Complex Networks



**attività in corso:**

KIDS\_RD / TRACCIA / TIMESPOT / PROMOD2 / EUROCIRCOL

**nuove proposte (in CSN5):**

AIM / BISCOTTO / FLAGS