Roma Tor Vergata

GRUPPO IV - FISICA TEORICA

Preventivi 2016

Coordinatore: Ya. Stanev

13 Luglio 2015

Anagrafica

- 42 ++ membri del gruppo teorico (37 FTE) in 7+2 Iniziative Specifiche (IS) :

- Dirigenti - Ordinari: R.Benzi, L.Biferale, F.Fucito, R.Marra, S.Morante, E.Pace, R.Petronzio, G.C.Rossi, R.Tripiccione (10%), N.Vittorio (30%), A. Vladikas,

- P.Ricercatori - Associati: M.Bianchi, R.Frezzotti, P.Mazzotta (50%), G.LaPenna (50%), G.Pradisi, M.Sbragaglia, Ya.Stanev,

- Ricercatori: A.Balbi (50%), G.M.De Divitiis, G.DeGasperis (40%) , A.Lapi, V.Minicozzi, J.F.Morales, N.Tantalo

- T. Determinato - Post-Doc : R.Ammendola, P.Cabella (50%), A.Gupta, G.Sahoo, K.Iyer, D.Belardinelli, F.Bonacorso, A.Scagliarini, R.Scattamachia, , F.Stellato, C.Wen , ++

- Dottorandi: 6 ++

- Laureandi: 1 ++

Iniziative Specifiche (IS)

IS	TEMATICA
STEFI	String Theory and Fundamental Interactions
LQCD123	Phenomenology with Lattice QCD
QCDLAT	Lattice QCD
QNP	Fundamental interactions, electroweak symmetry breaking, fermion masses and the Quest for New Physics
INDARK	Inflation, Dark Matter and Large Scale Structure of the Universe
BIOPHYS	Biological applications of theoretical physics methods
FIELDTURB	Particles and Fields in Turbulence and in Complex Flows

Progetto premiale-SUMA , NINPHA - a Roma1

Iniziative Specifiche (IS)

IS	AFFERENZE	FTE	RESP. RM2
STEFI	Bianchi, Fucito, Morales, Pradisi, Stanev, Wen	6+3	Pradisi
LQCD123	Ammendola, De Divitiis, Frezzotti, Petronzio, Rossi,Tantalo,	2.7	De Divitiis
QCDLAT	Vladikas	1+1	Vladikas
QNP	De Divitiis , Frezzotti, Petronzio	1.3	De Divitiis
INDARK	Balbi, Cabella, De Gasperis, Mazzotta, Vittorio	2.2	Balbi
BIOPHYS	Minicozzi, La Penna, Morante, Rossi, Stellato	3.5	Morante
FIELDTURB	Biferale, Benzi, Marra, Sbragaglia	4+10	Biferale

Borse Postdoc : 2 (STEFI, QCDLAT)

STEFI

STRONG – WEAK coupling Dualities

- Soft theorems for scattering amplitudes in QFT and SUGRA theories.

- - The 4-point function of the stress-energy tensor in conformal QFT.
- - Non-perturbative corrections to N=2 gauge theories.
- - The large Nc limit of supersymmetric gauge theories.
- - Branes in string theory
- - Neutron Majorana mass generated by exotic instantons .

LQCD123

- - Chromomagnetic operators.
- - light and charm : K,D in ETMC with Nf = 2 + 1 + 1 dynamical quarks.
- - NEW SIMULATIONS using maximally twisted mass Wilson fermions at the physical pion mass point.
- - Precise lattice QCD determination of the b-quark mass,
- - Electromagnetic effects using lattice simulations.
- - Flavored tetraquark mesons on the lattice.

QCDLAT

- - Matrix elements of 4-fermion operators and neutral Kaon oscillations.
- - Tightly bound tetraquark states vs bound two-meson molecules.
- - Gradient Flow to "smooth" divergences of local operators in QFT.
- - Generation of gauge configurations with Nf=2+1 in large volumes and small lattice spacing.

QNP

- - Gradient flow for scalar field theories.
- - One-loop perturbative analysis of correlation functions at positive flow times in phi^4 scalar field theory.

INDARK

- - Statistical anomalies in the angular distribution of CMB as observed by WMAP and Planck satellites.
- - Dipole modulation.
- - Quadrant asymmetry.
- - Dark energy phenomenology
- - Models of Inflation

BIOPHYS

- - Protein misfolding from soluble to insoluble state.
- - Spectroscopic techniques and numerical simulations.
- - The role of metals (Cu, Zn).
- - Molecular dynamics for interaction of short peptides.
- - Calculation of mesoscopic properties from the microscopic Markovian transition probabilities.

FIELDTURB

- - Complex fluids at macro and micro scales.
- - Turbulence : particle dispersions from point sources, anisotropic fluctuations, small droplets in turbulent flows, convection in presence of non homogeneous boundaries.
- - Dispersion of magnetic spots in the sun.
- - Physics of foams and emulsions using Lattice Boltzmann methods
- - Multi-scale coupling between molecular and hydrodynamical degrees of freedom in confined nanoscopic geometries.

Iniziative Specifiche (IS): preventivi in k€

IS	Missioni
STEFI	20
LQCD123	7
QCDLAT	4.5
QNP	2
INDARK	5
BIOPHYS	8
FIELDTURB	16
Totale IS	62.5

Dotazione 4 (DOT4)
preventivi in k€

Missioni	Inviti	Cons.	Semin.	Invent.	Lic.SW	Totale
15	15	4	12	8	1	55