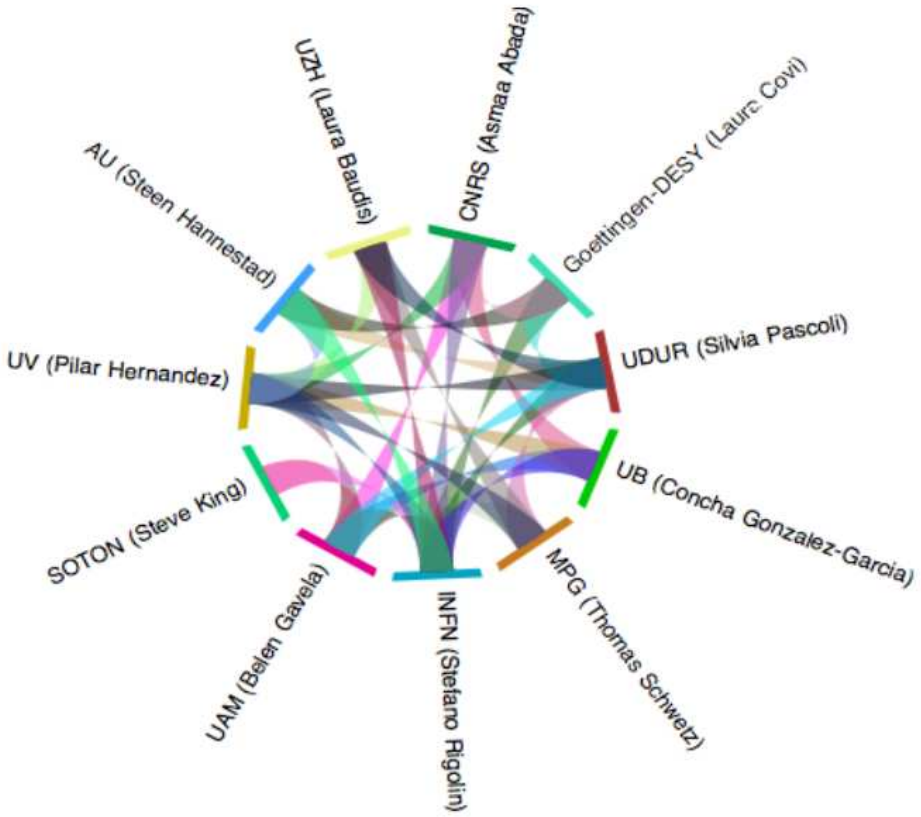
ITN network : CNRS Node



Invisibles Pre-Meeting, Madrid, 29-30 March 2012

Asmaa Abada

Orsay	Saclay	Lyon	Clermont	Grenoble
LPT	IPhT	IPNL	LPC	LPSC

Laboratories and People

☞ **Orsay**

Laboratoire de Physique Théorique: U. Paris-Sud 11 & CNRS

Asmaa Abada, Ulrich Ellwanger, Yann Mambrini, Grégory Moreau

☞ **Saclay**

Institut de Physique Théorique and IRFU CEA

Stéphane Lavignac, Philippe Brax, Thierry Lassere (Double Chooz)

☞ **Lyon**

Institut de Physique Nucléaire de Lyon and CRAL: U. Claude Bernard & CNRS

Sacha Davidson and Alexandre Arbey

☞ **Clermont**

Laboratoire de Physique Corpusculaire: U. Blaise Pascal & CNRS

Nazila Mahmoudi, Jean Orloff, Ana Teixeira

☞ **Grenoble**

Laboratoire de Physique Subatomique et Cosmologie: U. Joseph Fourier & CNRS

Sabine Kraml

- Postdocs: D. Das, D. Lopez-Fogliani, A. Vicente, Ch. Smith, A. Wingerten
- PhD students: A. Figueiredo, P. Mitropoulos, J. Quevillon, C. Weiland

Physics and collaborations with other nodes

☞ **Orsay**

Asmaa Abada

Neutrino mass models @ TeV: C. Weiland (PhD)

LFV Interplay - low-energies and colliders: A. Figueiredo (PhD) & A. Teixeira ★(Clermont)

Sterile neutrinos (non-minimal SUSY models): C. Weiland (PhD)

... seesaw mechanisms, effective theories, leptogenesis...

Ulrich Ellwanger

Light dark matter detection (non-minimal SUSY models)

Asymmetric dark matter and the BAU (non-minimal SUSY models): P. Mitropoulos (PhD)

Non-minimal SUSY models and Dark matter: A. Teixeira ★(Clermont)

... collider physics, beyond SM... Tools: NMSSMTools...

Grégory Moreau

RpV models of dark matter and massive neutrinos

... extra-dimensional models and collider searches ...

Yann Mambrini

Direct and Indirect dark matter searches: B. Zaldivar ★(UAM)

Dark matter vs Higgs searches at colliders: A. Djouadi & J. Quevillon (PhD) ★(CERN)

... alternative DM scenarios, inflation, string theory...

Physics and collaborations with other nodes

☞ **Saclay**

Stéphane Lavignac

New links between BAU and massive neutrinos: A. Romanino ★(INFN)

LFV from type II seesaw SO(10) unified models: A. Romanino ★(INFN)

... leptogenesis, LFV, sterile neutrinos...

Philippe Brax

Dark energy from scalar fields coupled to gravity

Dark energy detection - Primakoff effect and Casimir type forces: A. Lindner ★(DESY)

... modified gravity, cosmology...

Thierry Lasserre

Double Chooz experiment

Reactor neutrino anomaly

... neutrino-dedicated experiments...

Physics and collaborations with other nodes

☞ Lyon

Sacha Davidson

Neutrino mass models @ TeV: M. Elmer (PhD)

Axion dark matter: M. Elmer & G. Raffelt ★(Max Planck)

Supra-luminous ν: Nuria Rius, Pilar Hernandez, M. Sevilla (PhD) ★(Valencia)

... radiative lepton decays, LFV @ colliders, leptogenesis...

Alexandre Arbey

Supersymmetric dark matter and colliders: N. Mahmoudi ★(Clermont)

Numerical Tools (AlterBBN, SuperIso Relic): N. Mahmoudi ★(Clermont)

... theoretical cosmology, astroparticles, ...

☞ Grenoble

Sabine Kraml

Interplay of dark matter & collider searches ★(CERN)

Axion/axino dark matter $\Rightarrow$ Leptogenesis and gravitino problem

Sneutrino (thermal) dark matter

... tools, new physics at LHC...

Physics and collaborations with other nodes

☞ **Clermont-Ferrand**

Nazila Mahmoudi

Supersymmetric dark matter and colliders: A. Arbey ★(Lyon)

Numerical Tools (SuperIso Relic): A. Arbey ★(Lyon)

... flavour physics, collider physics, beyond SM... Tools: SuperIso

Jean Orloff

Light dark matter scenarios

Thermal leptogenesis

... flavour physics, beyond SM...

Ana Teixeira

LFV Interplay - low-energies and colliders: A. Figueiredo (PhD) & A. Abada ★(Orsay)

Non-minimal SUSY models and Dark matter: U. Ellwanger ★(Orsay)

... beyond the SM at LHC, leptogenesis, tools ...

Further collaborations

Several established, long lasting collaborations with members of other ITN nodes:

UAM (B. Gavela, M. J. Herrero, C. Muñoz, D. Cerdeño, ...);

Valencia (P. Hernandez, N. Rius, A. Santamaria, ...);

MPG (G. Raffelt, ...);

DESY (Lindner)

INFN (A. Romanino, S. Petcov,...);

CERN;

A. Narino (M. Losada)

... and surely many others here forgotten ... (sorry!)

CNRS partners: active tasks (in principle)

WP.1 Neutrino Physics		
1.1 Neutrino phenomenology: determining neutrino properties	✔	
1.2 The origin of neutrino masses and mixing	✔	
1.3 Astroparticle physics and cosmology of neutrinos		∼
1.4 Experimental neutrino support	✔	
WP.2 Dark Matter Physics		
2.1 Determining DM properties	✔	
2.2 Theory of DM	✔	
WP.3 Neutrino and DM physics complementarity		
3.1 Neutrino as DM	✔	
3.2 Neutrinos as DM probes		✘
3.3 Unified models of neutrino masses and DM	✔	
3.4 Detector technology for both DM and $0\nu2\beta$ decay searches		✘

CNRS partners: training researchers

- ☞ Training environment (graduate and undergarduate) - mixed CNRS-University structure;
- ☞ Most members engaged in graduate teaching programmes: "École Doctorale" (Theoretical and Experimental particle physics);
- ☞ Organisation of numerous training events: Summer Schools ("Les Houches", "Cargèse", "École de Gif", CERN schools, ...);
- ☞ Regular meetings exclusively dedicated to young researchers (PhD students) - "Journées Jeunes Chercheurs"