EURIDICE

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EUROpean Investigations on Daphne and other International Collider Experiments

Using Effective Theories of Colors and Flavors for High precision Elementary particle physics from the Φ to the Υ

List of participants

1. G. Pancheri - INFN Frascati National Laboratories
2. A. Pich -University of Valencia
3. A. Bramon - Universitat Autonoma de Barcelona
   - A. Grau - U. of Granada
4. M. Knecht - CNRS-CPT Luminy-Marseille
5. J. Stern - CNRS-IN2P3 Orsay
6. M.R. Pennington - University of Durham
7. J. Bijnens - University of Lund
   - J. Eeg - U. of Oslo
8. N. Tornqvist - University of Helsinki
9. F. Jegerlehner - DESY Zeuthen
   - J. Kuhn - U. of Karlsruhe
10. J. Gasser - University of Bern
11. G. Ecker - University of Vienna
12. M. Krawczyk - University of Warsaw

Research Objectives and Content

A precise determination of masses, coupling constants and order parameters in the Standard Model of elementary particles :

1. Charge-Parity Violation **CP**
   - Clarify the origin of CP violation
   - Quantum Mechanics entanglements
   - Cabibbo-Kobayashi-Maskawa matrix elements
2. Chiral Perturbation theory **χPT**
   - 1/Nc expansion, lattice and QCD Dispersion Sum Rules
   - Effective low-energy couplings from first principles
   - Chiral Symmetry Breaking vs. Number of Colors and Flavours
   - Baryon χPT and Hypernuclei
3. **Quark Masses**
4. Fine structure constants $\alpha(M_Z)$ and the μ anomalous magnetic moment $(g-2)_\mu$
5. Heavy Flavours Dynamics and Decays at **BABAR, BELLE, CESR-C, FOCUS, HERA-B, LHC-B**
6. Strong Interaction Limit of Quantum Chromodynamics **QCD**
   - α_{QCD} in the infrared
   - Glueballs
   - Hybrids

Training programme

Type of Training	Planned Activities	Accompanying Measures
Individual training	• Collaboration with team scientists • Collaboration on joint projects with YRs • Course work for MsC students	Seminars Visits to home institution International Conferences
Common training	• Network Meetings • Topical Network Workshops • **LNF Spring School**	Organization of Working Group meetings with YR

Organization and management

- Working Groups and Task assignements
  - Theoretical Developments in Effective Field Theories
  - Theoretical Estimates and Modelling
  - Studies for Future Experiments
- Five Core Teams
  - Chiral Perturbation Theory - Bern
  - QED – DESY Zeuthen
  - Large number of Colors – Marseille
  - Hypernuclei - Valencia
  - DAΦNE Physics - Frascati
- Committee of Scientists – 17 members
  - 12 Nodes
  - 3 Subnodes
  - 1 Monitor for B-physics
  - 1 DAΦNE Analysis Coordinator
- Web page http://www.lnf.infn.it/rtn/
- Yearly Collaboration Meetings
- Final Meeting