

Electric Dipole Moments and muon g-2 plan:
making the case for higher scale physics

Yannis K. Semertzidis

Brookhaven National Lab

Experiment & Theory

EDMs

- leptonic
- hadronic

g-2

- muon
- electron?

EDMs

Hadronic

Leptonic

n, Hg, Xe, D, P, Ra,..

electron, muon

quark-color EDM
connection to LFV!

See talk by J. Hisano

Write-up goal: all major experimental and theoretical efforts to be included

- Theory first:
 1. Physics scale reach
 2. Establish the sensitivity to various physics parameters for each major experiment
 3. Create a TABLE with sensitivity reach for each system

Experimental efforts

- Description of the method
- Sensitivity goal
- Status of the proposal/idea
- R&D needed, timeline of expected progress
- Critical items
- Timeline of the experimental effort
- Create a TABLE with goals and expected results

Many experts agreed to come to the October 9-11 meeting and/or contribute to the write-up:

- W. Marciano (g-2 theory)
 - L. Roberts (g-2 experiment)
 - J. Hisano (Hadronic EDMs, th.)
 - R. Timmermans (hadronic EDMs, th.)
 - K. Jungmann (Ra, Rn, exp.)
 - Y. Orlov, YkS,.. (deuteron, muon, exp.)
 - P. Harris (neutron, exp.)
 - K. Kirch (neutron, exp.)
 - I. Masina, ... (leptonic EDMs, th.)
 - E. Hinds (electron, exp.)
 - D. DeMille (electron, exp.)
- Need to work on:
- S. Lamoreaux & M. cooper (neutron, exp.)
 - M. Pospelov (hadronic, th.)
 - M. Romalis (Xe, exp.)
 - E. Fortson (^{199}Hg , exp.)
 - ...

Summary, Comments?

- The physics reach of the EDM, T-violating and $g-2$ expts is worth emphasizing
- Theory and experiment in a unified EDM presentation effort
- Most of the major EDM efforts and the muon $g-2$ are adequately represented.
- Who is missing?