

Introduction – Muon $g-2$ Theory Initiative

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for the Steering Committee

March 12, 2018 – UConn HLbL WG workshop

Muon $g-2$ Theory Initiative – Goals

Theory Support for the Fermilab E989 and J-PARC E34 experiments to maximize their impact:

- ▶ Work towards reduction and scrutiny of uncertainties of hadronic contributions
 - ▶ Provide summary of theory calculations of the hadronic contributions
- ⇒ Write report before Fermilab and J-PARC experiments have first results (target December 2018)

Muon $g-2$ Theory Initiative – Steering Committee

- ▶ Gilberto Colangelo (Bern) gilberto@itp.unibe.ch
- ▶ Michel Davier (Orsay) davier@lal.in2p3.fr
- ▶ Simon Eidelman (Novosibirsk) eidelman@cern.ch
- ▶ Aida El-Khadra (UIUC & Fermilab) axk@illinois.edu
- ▶ Christoph Lehner (BNL) clehner@bnl.gov
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- ▶ Andreas Nyffeler (Mainz) nyffeler@uni-mainz.de
- ▶ Lee Roberts (Boston, Fermilab E989) roberts@bu.edu
- ▶ Thomas Teubner (Liverpool) thomas.teubner@liverpool.ac.uk

Muon g-2 Theory Initiative – Plan

- ▶ Organize HVP and HLbL working groups (sign up at <http://goo.gl/YjKVkS>, currently 52 for HVP and 33 for HLbL)

HVP working group coordinators

- ▶ Michel Davier (Orsay) davier@lal.in2p3.fr
- ▶ Simon Eidelman (Novosibirsk) eidelman@cern.ch
- ▶ Aida El-Khadra (UIUC & Fermilab) axk@illinois.edu
- ▶ Thomas Teubner (Liverpool) thomas.teubner@liverpool.ac.uk

HLbL working group coordinators

- ▶ Gilberto Colangelo (Bern) gilberto@itp.unibe.ch
- ▶ Christoph Lehner (BNL) clehner@bnl.gov
- ▶ Andreas Nyffeler (Mainz) nyffeler@uni-mainz.de

Muon g-2 Theory Initiative – Plan

- ▶ Organize plenary and working-group workshops:
 - ▶ 3-6 June 2017, near Fermilab, first plenary workshop

First Workshop of the Muon g-2 Theory Initiative

3-6 June 2017 Q Center

UIC/Central time zone

Search



66 registered participants, 40 talks, 15 discussion sessions (525 minutes)

- ▶ 12-14 February 2018, KEK, HVP working group workshop
- ▶ 12-14 March 2018, University of Connecticut, HLbL WG workshop
- ▶ 18-22 June 2018, Mainz, 2018 plenary meeting

Muon g-2 Theory Initiative – Plan

- ▶ Working group workshops goal: critically assess current theory status and **prepare work for report** ⇒ Discussion sessions
- ▶ **Discussion sessions at this workshop:**
 - ▶ Lattice Approach, 30 minutes on Monday
 - ▶ Dispersive Approach and Inputs / Exclusive Channels, 30 minutes on Tuesday
 - ▶ Error estimates / Sum-rules, 20 minutes on Wednesday
 - ▶ White Paper Preparations, 90 minutes on Wednesday
- ▶ Please send (clehner@bnl.gov) requests for topics of discussions; we may be able to accommodate presentations of a few slides in these sessions as well.

Possible topics of discussion:

- ▶ Can we have a lattice calculation with full error budget by the end of the year? (FV, discretization, chiral?, missing disconnected diagrams)
- ▶ How do we make progress on estimating truncation-uncertainties in the dispersive approach? Can we use the lattice to help estimate the truncation?
- ▶ What is the status of input for the dispersive approach and what improvements from experiment/lattice can we expect by the end of the year?
- ▶ What cross-checks between lattice and dispersive approach are planned for the rest of the year?

Thank you to UConn!

Let's have a productive workshop!