

Mass in the Standard Model and Consequences of its Emergence

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Abstract | Main Topics

The USA's National Academy of Science, assessing the case for an electron ion collider (EIC), stated that revealing the origin of the proton's mass is one of the most profound questions in physics. The question's simplicity hides its breadth. Its answer will explain, inter alia: why the proton is stable; why $m_{\text{proton}} \approx 2000 m_{\text{electron}}$; and why the strongly-interacting pion possesses a lepton-like mass. Not all answers may need to wait for an EIC. The last decade has seen considerable improvements in our theoretical understanding of these issues, owing to major advances in continuum and lattice methods. Moreover, new generation experiments promise to expose the structure of hadrons with unprecedented detail. We are on the verge of a new era in strong interaction physics.

This workshop will therefore gather a group of experts to discuss significant developments, identify new goals, and plan the next steps forward in strong QCD.

Keynote speakers

Experiment | Daniel **CARMAN**, Oleg **DENISOV**, Rolf **ENT**, Sebastian **NEUBERT**, Elisabetta **PRENCIPE**, Bogdan **WOJTSEHOWSKI**, Dbeysi **ALAA**, Bowen **XIAO**

Theory - Continuum | Patrick **BARRY**, Daniele **BINOSI**, Lei **CHANG**, Alexandre **DEUR**, Gernot **EICHMANN**, Fei **GAO**, Feng-Kun **GUO**, Gastao **KREIN**, Shunzo **KUMANO**, Herve **MOUTARDE**, Jianwei **QIU**, Khepani **RAYA-MONTAÑO**, Jorge **SEGOVIA**, Adam **SZCZEPANIAK**

Theory - Lattice | Dalibor **DJUKANOVIC**, Huey-Wen **LIN**, Sinead **RYAN**

Organizers

Daniele **BINOSI** (ECT*); Christian **FISCHER** (Justus-Liebig-Universität Gießen);
Tanja **HORN** (Catholic University of America); Craig **ROBERTS** (Nanjing University)

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Director of the ECT*: Professor Gert **Aarts** | The ECT* is part of the Fondazione Bruno Kessler.
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