the PHYSICS of MUSIC AND the MUSIC of PHYSICS

MONTREUX - PETIT PALAIS
THURSDAY, 9 JULY, 15:00
WORKSHOP

Robert Kieffer, CERN Beam Instrumentation Group
Gérald Parsehian, Laboratoire de Mécanique et d’Acoustique, CNRS, Marseille
Juliana Cherston, Massachusetts Institute of Technology Media Lab
Ewan Hill, University of Victoria, TRIUMF, ATLAS Experiment at CERN
Domenico Vicinanza, Anglia Ruskin University, GEANT Association
Al Blatter, Pianist

http://cern.ch/mjp2015
From Run 1

Run: 189280
Event: 143576946
2011-09-14 12:37:11 CEST
Why Run 2?
The Questions
What are we made of?

- **Matter**: $10^{-9}$ m
- **Molecule**: $10^{-9}$ m
- **Atom**: $10^{-10}$ m
  - Composed of a nucleus and electrons
- **Nucleus**: $10^{-14}$ m
  - Composed of protons and neutrons
- **Protons**, **Neutrons**: $10^{-15}$ m
  - Composed of quarks
- **Quark**, **Electron**: $<10^{-18}$ m
Where did we come from?
Where are we going?
Where did the antimatter go?
What is holding this together?
Why are these so different?

Gravity
Magnitude = 1

Weak Force
Magnitude = $10^{25}$

Electromagnetism
Magnitude = $10^{36}$

Strong Force
Magnitude = $10^{38}$
Could there be an additional spatial dimension?
Robert Kieffer and Gaëtan Parseihian
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Al Blatter
The Cosmic Pianist!
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Thank You!

MONTREUX JAZZ ARTISTS FOUNDATION by Montreux Jazz Festival