



Education and professional positions

1990 Master (Laurea) Department of Physics, University of Pisa (Italy)

1995 PhD in Physics Department of Physics, University of Catania (Italy)

1995 – 1997 PostDocs INFN Pisa

1999 – 2004 PostDocs University of Padova

2005– 2009 Researcher University of Padova

2010 – 2018 Associated Professor University of Padova

2019 – present Full professor University of Padova



Scientific activity

1989 – 1990 **WA84** experiment at CERN: detector construction, scintillating fibre tracking, data analysis

1995 – 1998 Cerenkov Light Ultraviolet Experiment (**CLUE**): data taking and data analysis.

1991 – present **CDF** experiment at Fermilab, Chicago (USA):

- Measurements of Bd and Bs mesons properties, Higgs searches and W and Z bosons study.
- Construction of tracker and muon systems and the track and calorimeter trigger systems.
- Coordination Computing and Data Handling.

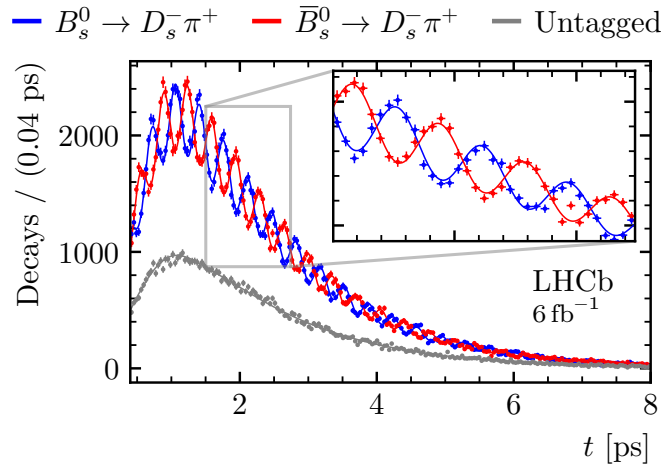
2012 – present **LHCb** experiment at CERN:

- Electroweak physics measurements
- Coordination of Innovative Analysis Techniques working on quantum computing applied to HEP

2021 – present **IMCC**, deputy PI, Physics&Detector group coordinator.

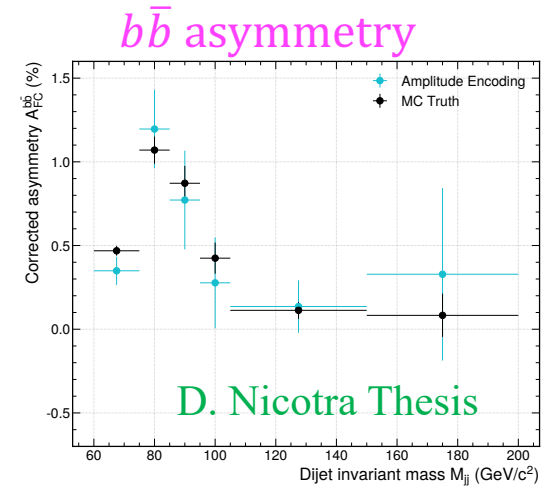
What I would like to know is how go beyond standard model physics description

I studied the B_d^0 and B_s^0 mesons system to test the Standard Model in that sector



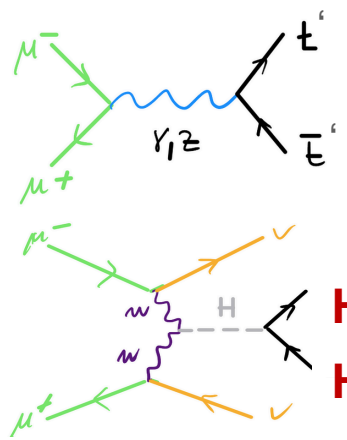
Measuring B_d^0 and B_s^0 mesons oscillations is a pure quantum mechanical process that allowed to measure the Cabibbo-Kobayashi-Maskawa matrix elements. Optima SM tests!

Then, I realized that the electroweak sector of the SM is the place to be investigated. I searched for Higgs in CDF and in LHCb, and studied the fundamental quantities of SM in W and Z boson also by using new software technologies, quantum computing



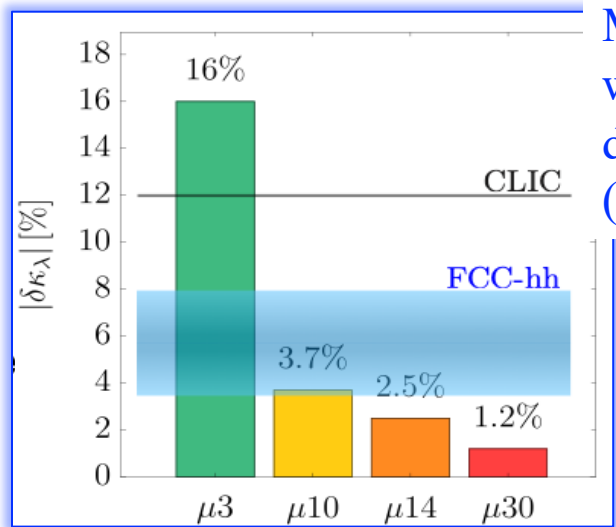
After the Higgs discovery, so SM-like (so far) and no other hint of new physics, it was clear to me that something new had to be invented to go beyond the SM. Then, I met the muon collider...

Multi-TeV muon collider opens a completely new physics regime



Energetic final states

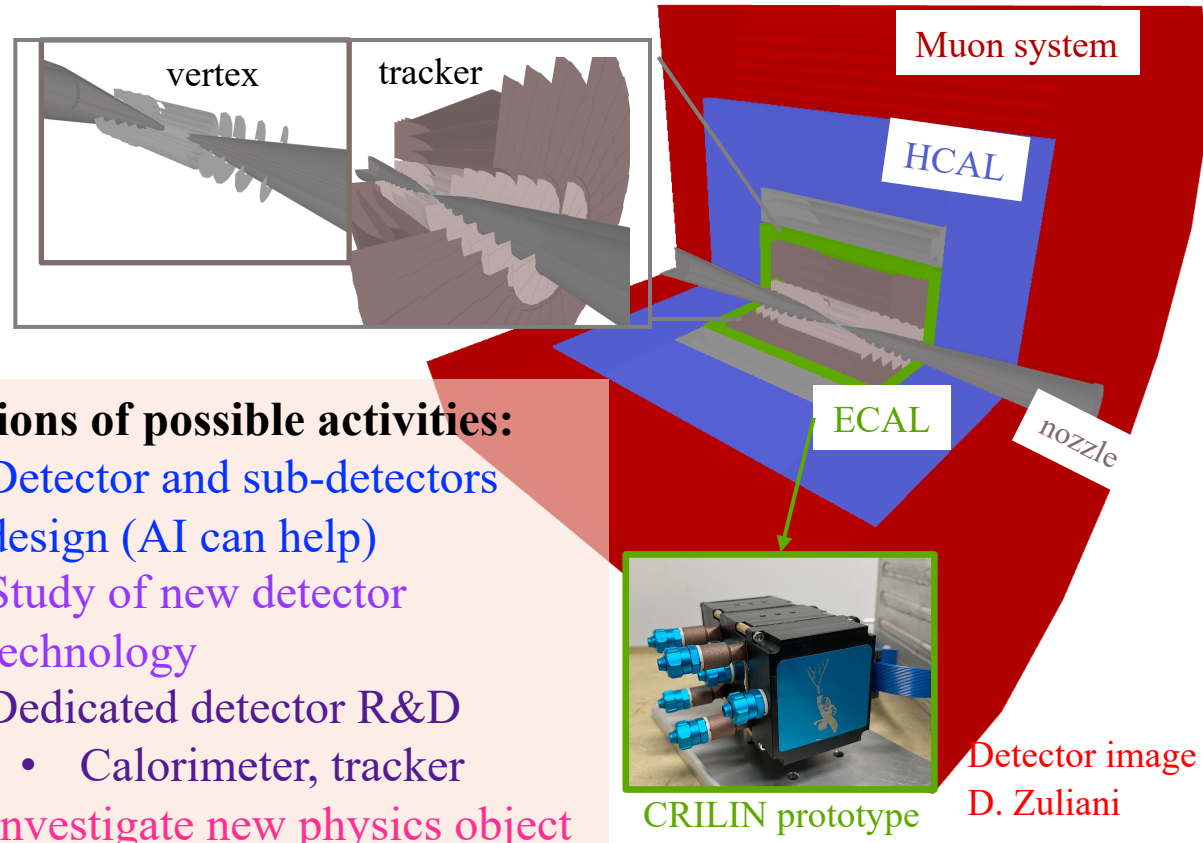
Higgs boson physics:
 - couplings
 - coupling to itself



Most precise measurement with 10 ab^{-1} ~5 years data taking (FCC-hh 30 ab^{-1} ~50 years)

First $\sqrt{s} = 10$ TeV detectors concept design MUSIC and MAIA (presented in other talks)

MUSIC Detector



Zillions of possible activities:

- Detector and sub-detectors design (AI can help)
- Study of new detector technology
- Dedicated detector R&D
 - Calorimeter, tracker
- Investigate new physics object reconstruction (AI, QC)
- Propose new creative physics measurements

Meeting every Tuesday at 4:00PM CET
 MUONCOLLIDER-DETECTOR-PHYSICS@cern.ch