ASYMOW:
"Power to the LHC data: an ASYmptotically MOdel-independent measurement of the W boson mass"

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Project Overview

- **Objective** ➜ precision measurement of M_W with **full Run2+Run3 CMS data**
  - ΔM_W < 10 MeV required by EWPT ➜ x2 smaller than best single-experiment to date
- **New methodology** ➜ mitigate impact of **theoretical uncertainties**
  - Dominant source of systematic uncertainties so far.
  - Requires **more data than any present or past** measurement.
- **Main expected deliverables** ➜ Measurement of M_W (intermediate: <2024, ultimate: <2026), unfolded distributions, detector calibration constants
- **Areas of interest** ➜ **MUO, TRK, JME, GEN, XPOG, SMP, LHCEWWG**
  - Keywords: *muon scale, muon efficiency, recoil, Monte Carlo, PDF, Drell-Yan, pQCD*
- **Skills** ➜ GEN, Monte Carlo, Tracking, Computing, Programming (CMSSW, ROOT, RooFit, Python, C++, SciPy, Mathematica)

Project Details

- **ASYMOW is an ERC-funded project**
  - It has passed a thorough **evaluation step.** Subject to intermediate reports and audits.
  - PI → **Lorenzo Bianchini**
  - Host Institutions → **University of Pisa**, INFN **Pisa**, **Scuola Normale Superiore**
- **Team members based at Pisa**
  - **Travel opportunities** for education & dissemination are included
  - Short and **medium-term visits at CERN** allowed under mutual agreement
  - **Full-time committment** → we will try to accommodate service work within project needs
- **Recruitment will follow official employment procedure of the host institutions**
  - Online applications will be publicly advertised via inspire & cms.talk in due time
  - Exp. deadline for applications → **Jun. 1°, 2021**. Exp. start of position → **Nov. 1°, 2021**

Position Details

- **n.1 PhD**
  - Host: Scuola Normale Superiore
  - Yearly gross salary → ~26 kEur
  - Duration → 4 years

- **n.2 PostDoc**
  - Host: University of Pisa and INFN Pisa
  - Yearly gross salary → ~ 36 kEur
  - Duration → 2(+1) or 3 years

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