

Masterclass 2015-03-11/12
CMS WZH

Általános szervezés, lebonyolítás:

http://www.physicsmasterclasses.org/downloads/Manual_Videoconference_Organizers_v12.pdf

A mérésekről:

<https://quarknet.i2u2.org/page/cms-masterclass-wzh-measurement-documentation-2015>
<https://quarknet.i2u2.org/content/cms-wzh-path-measurement-2015>

A spreadsheet (CIMA) és események elérése (iSpy)

<https://www.i2u2.org/elab/cms/cima/index.php>

DVD ISO: <http://www.physicsmasterclasses.org/downloads/DVD2015/dvd.html>

Események osztályozása a CIMA spreadsheet-en

Students use event display of (mostly) leptonic decays to determine

- **Lepton ID (electron, muon).**
- This is to characterize the event, not a individual particles.
 - If the event has one muon track (long, red) or two muon tracks (actually likely a muon-antimuon pair) it is a single **muon event**.
 - If the event has one electron track (short, yellow) or two electron track (actually likely an electron-positron pair) is is a single **electron event**.
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- **Likely particle ID (W, Z, zoo, Higgs)**
 - W candidate** appears as a single electron track or muon track and a missing Et vector (yellow arrow, always transverse to beamline)
 - Z candidate** appears as 2 muons or 2 electrons; it is not always a Z. It may or may not have missing Et in the event.
 - Suspected Higgs (H)**; these are rare but noteworthy. Events show as H→ZZ: 2 electrons and 2 muons, or 4 electrons, or 4 muons.
H→γγ: no electron tracks but 2 large energy deposits (seen as towers) in ECAL.
 - Zoo events** are "none of the above" but there can be interesting events among these.
- **Charge if W**, using curvature of electron or muon tracks. It helps to select the X-Y view and "orthographic mode" (the "flat cube" button), zoom in and to use a paper straight edge.
- **Mass if Z or H candidate** (taken from CIMA)