

# Journal Club: Session 4: 18.Nov 2019, 16:30

TOPIC: Higgs Boson

## Material:

- |   |                      |
|---|----------------------|
| A: ATLAS Collaboration, Phys.Lett. B716 (2012) 1-29       | (arXiv: 1207.7214v2) |
| B: CMS Collaboration, Phys. Rev. Lett. 120, 231801 (2018) | (arXiv:1804.02610v2) |
| C: ATLAS Collaboration, Phys. Lett. B 784 (2018) 173      | (arXiv:1806.00425v2) |

## Topics for discussion:

- 1) What kind of properties are required for an event to be identified as  $H \rightarrow ZZ^* \rightarrow 4\ell$  in A?
- 2) Why is the reconstructed invariant mass of the Z bosons not at  $\sim 91\text{ GeV}$  for both of the bosons?
- 3) What are possible background processes to  $H \rightarrow \gamma\gamma$ ?
- 4) How can the  $t\bar{t}H$  process be produced at LHC?
- 5) Why is the  $t\bar{t}H$  process hard to identify at hadron colliders?