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Understanding double Higgs boson production with vector boson fusion with the ATLAS detector at the LHC

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**Abstract content (Max 300 words)
Formatting &
Special chars**

The discovery of the Higgs boson on 4 July 2012 was one of the most monumental discoveries in particle physics. The discovery of a scalar Higgs boson in nature confirmed the existence of the Higgs field, which permeates throughout space. The Higgs field is responsible for giving mass to elementary particles that interact with it. The Higgs boson is created by spontaneously breaking the symmetry of the Mexican hat potential, resulting in a Higgs self-coupling term, which leads to double Higgs production. There are various production mechanisms for the Higgs boson, with vector boson fusion as one of the most important production mechanisms for the Higgs boson. In proton collisions at the Large Hadron collider at CERN, vector boson fusion happens when quarks from each one of the two colliding protons radiate W or Z bosons that subsequently interact or “fuse” to produce a Higgs boson. I am studying the kinematics of double Higgs production via vector boson fusion.

**Apply to be
 considered for a student
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Yes

**Level for award
 (Hons, MSc,
 PhD, N/A)?**

Hons

**Main supervisor (name and email)
and his / her institution**

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 submit a short paper
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No

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Yes

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