

Hep-ex postdoctoral researcher Recruit at Peking University

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北京大學
PEKING UNIVERSITY

The group, the position

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- The PKU HEP group plays important roles in many experiments, including CMS, LHCb, BESIII, Belle/BelleII, and Micro Pattern Gaseous Detector (MPGD) R&D
- There is also a theory group with strong involvements in the TeV physics
- The PKU CMS group currently consists of five professors, four postdoctoral researchers, and around twenty graduate students
 - Strongly involves in the SM electroweak physics (multi-boson, VBS/VBF processes, double Higgs production etc.) and the B physics sector
 - Has long term researches on gas detectors and the relevant electronics. Developed the front end electronics of GEM detectors for the phase II upgrade and will host one of the production stations
- The successful candidate is expected to work on double Higgs physics with advanced techniques (deep learning etc.) and the Phase II upgrade projects on the muon detector [link on inspirehep](#)

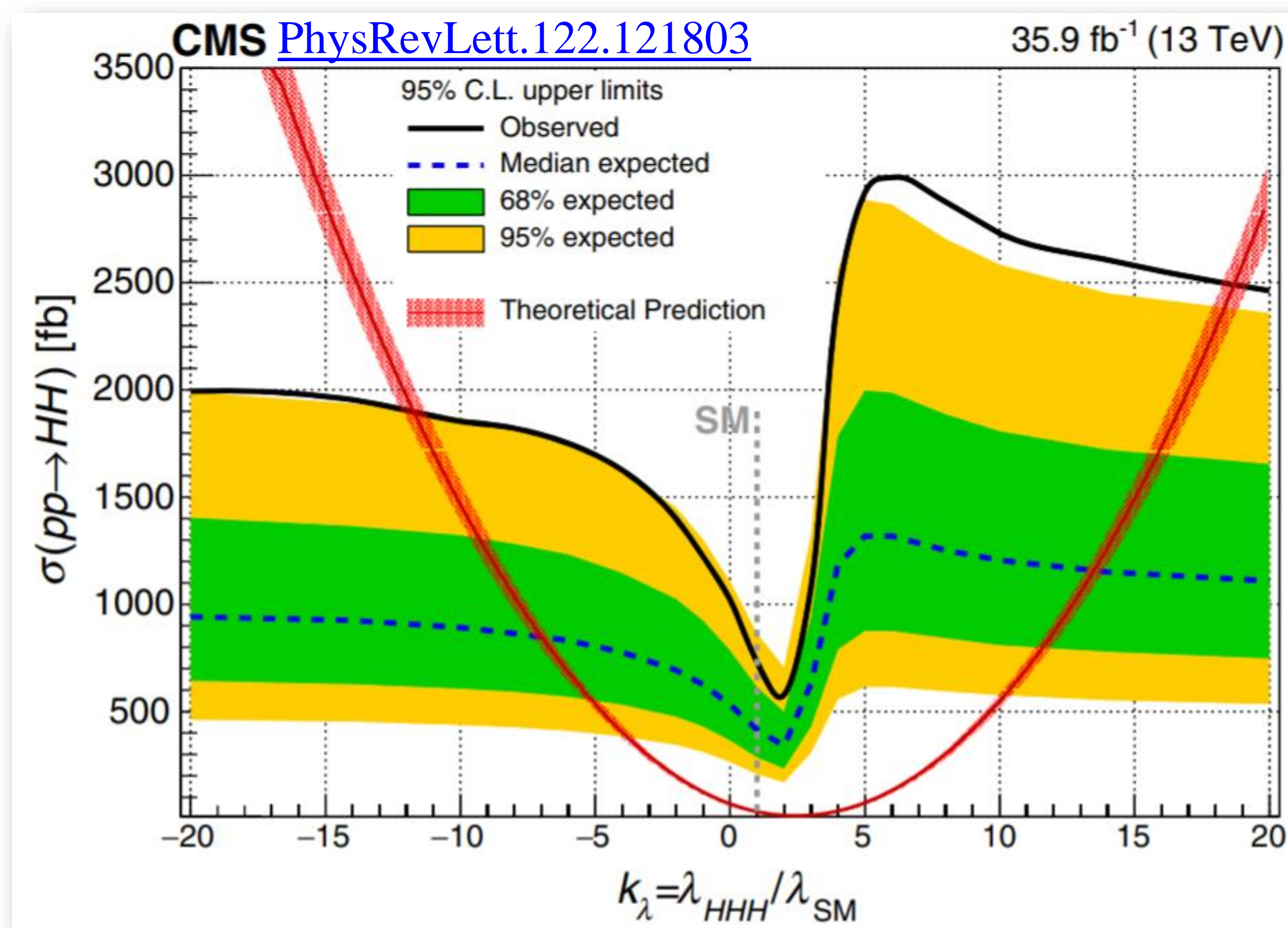
HH production

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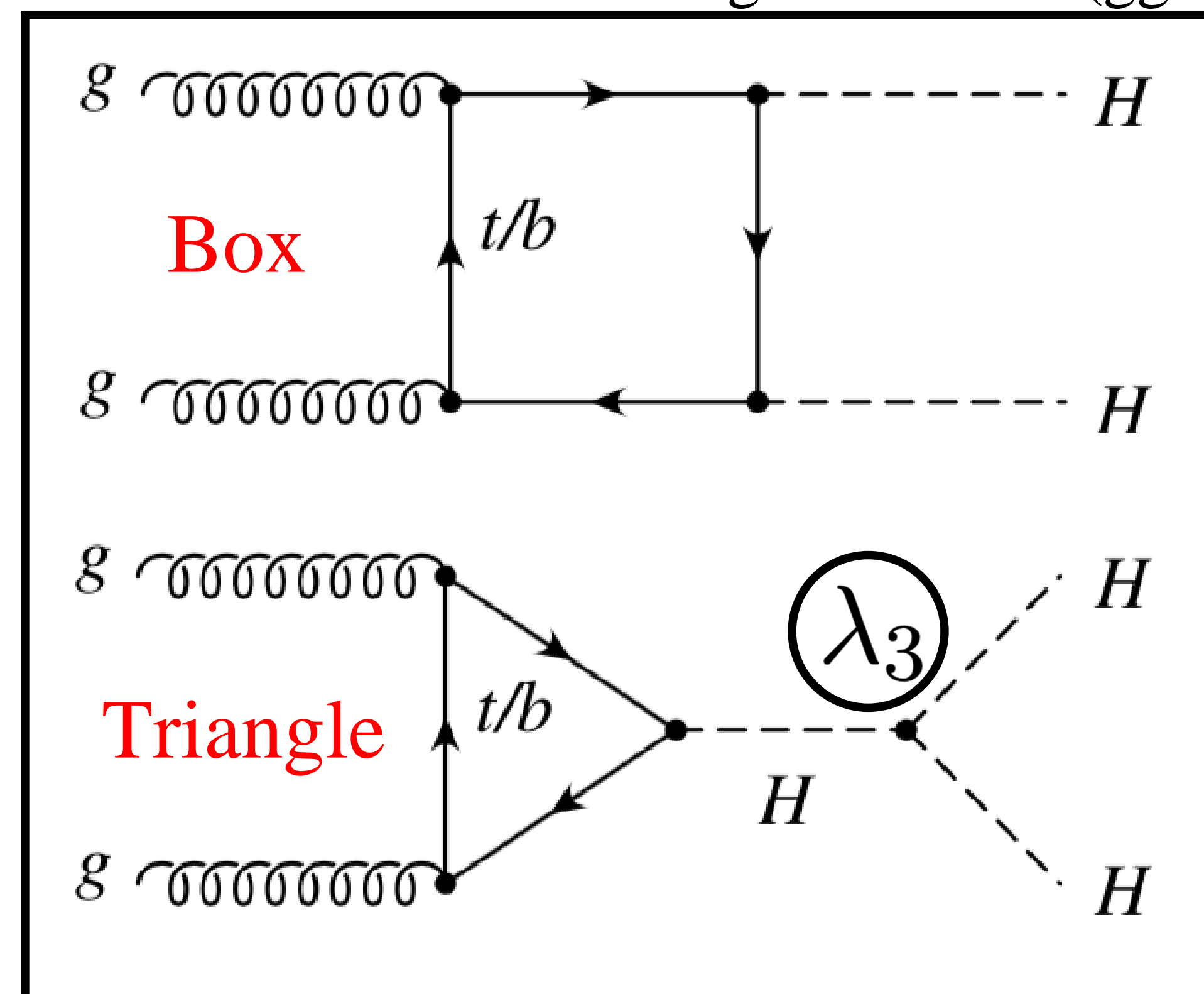
- Searches for double Higgs production
 - Aiming at measuring the Higgs self-coupling and unveiling the Higgs potential structure
- Good time in history to study Higgs self-coupling

$$\mathcal{L} = -\frac{1}{2}m_h^2 h^2 - \underbrace{\left(\lambda_3\right)}_{\text{To explore}} \frac{m_h^2}{2v} h^3 - \lambda_4 \frac{m_h^2}{8v^2} h^4$$

Done
To explore
Too early

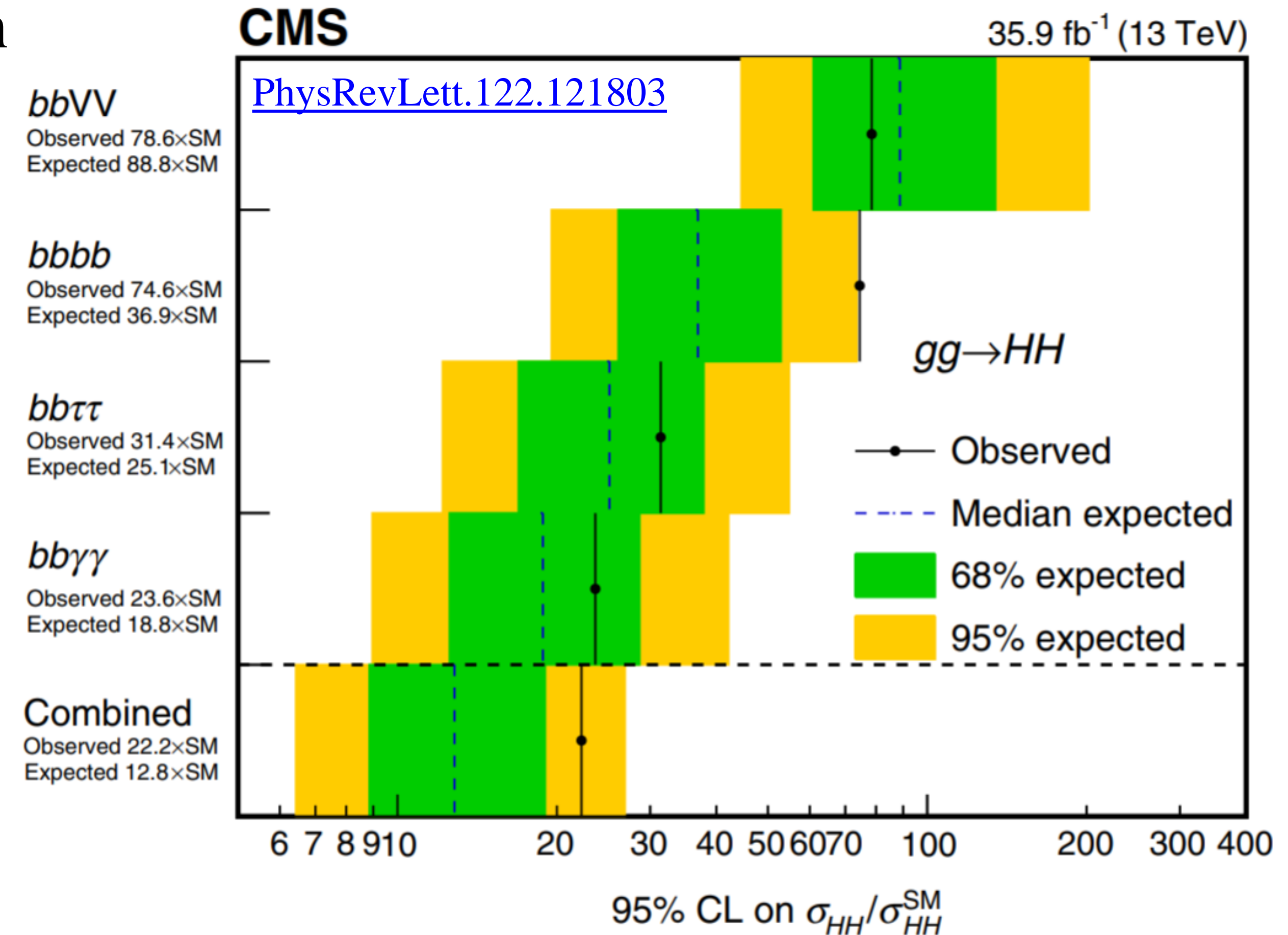


Gluon-gluon fusion (ggF)

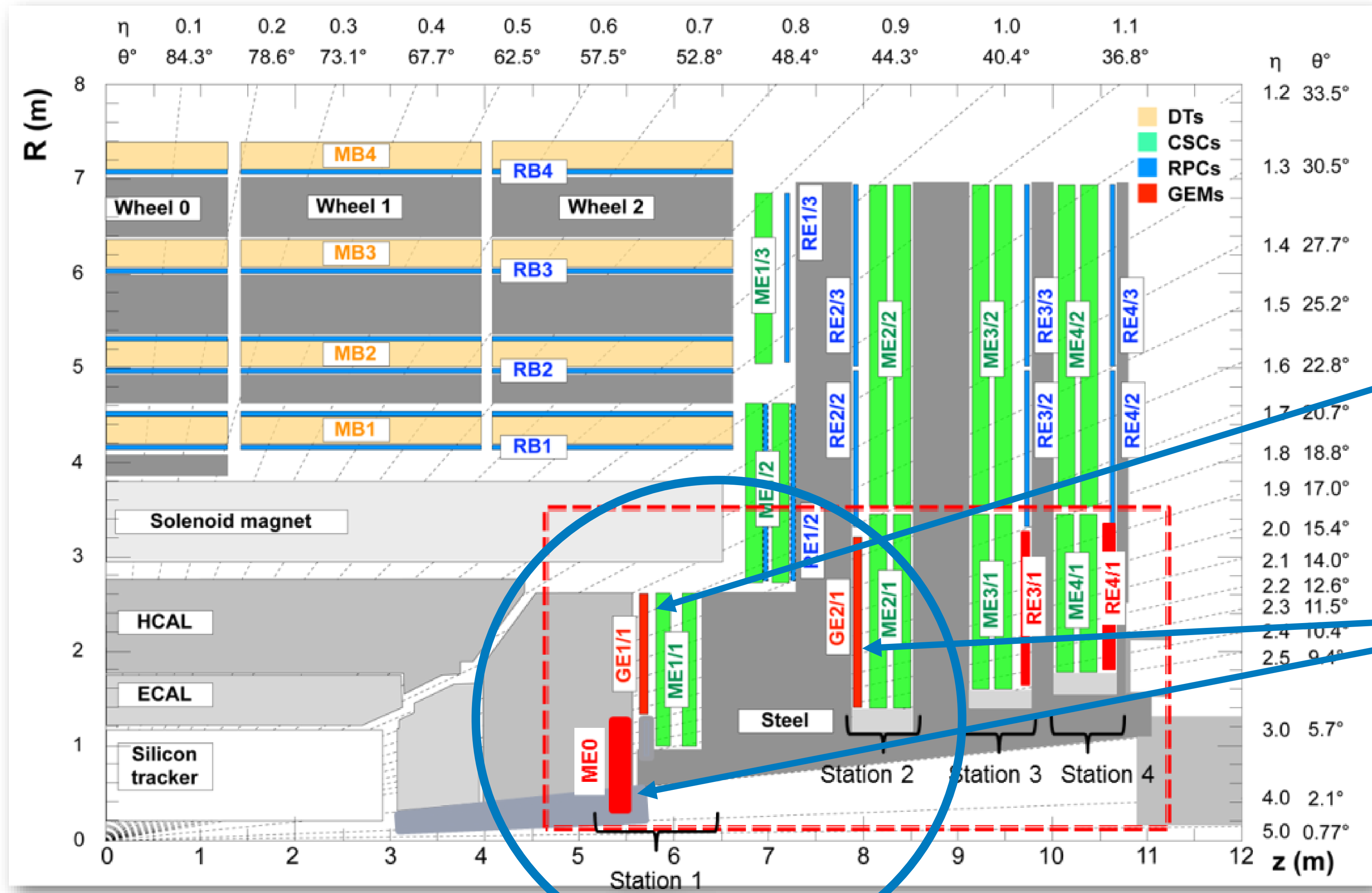


HH channels

- Primarily interested in the 4b final state
- Currently performing the VHH analysis with 0/1/2L/full-had and 4b
 - The first time looking at this new production mode
 - Not only Higgs self-coupling, but also VVHH vertices
- Other HH activities that we are interested in
 - New HH decays channels
 - HH combination
 - Higgs self-coupling with single Higgs



Phase II muon detector upgrades at PKU



GE1/1: Production and test of GEB

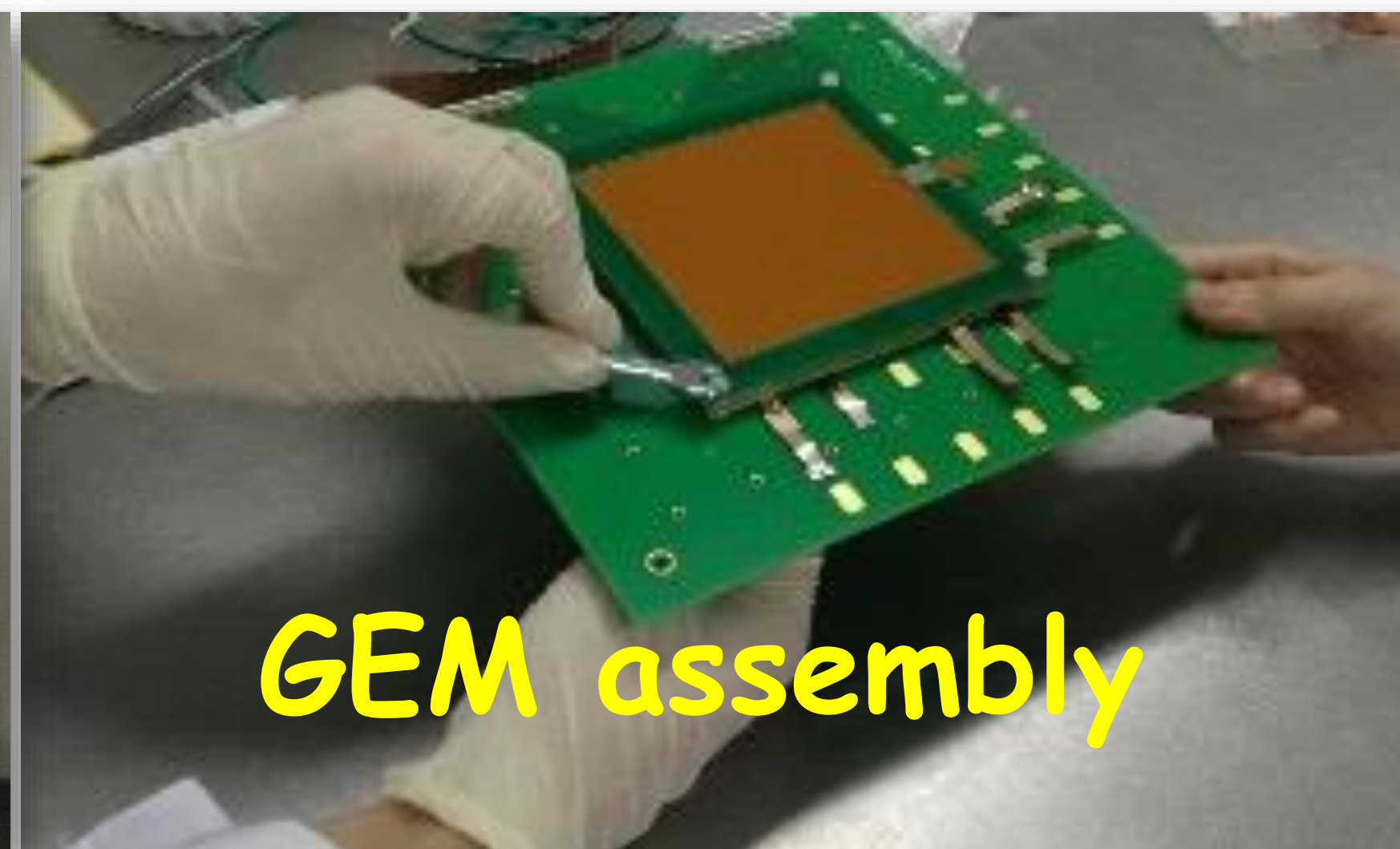
The first complete Phase II Upgrade detector @ CMS Sep 18, 2020

GE2/1+ME0:

- Design, Production and test of GEB
- Assembly and test of GEM

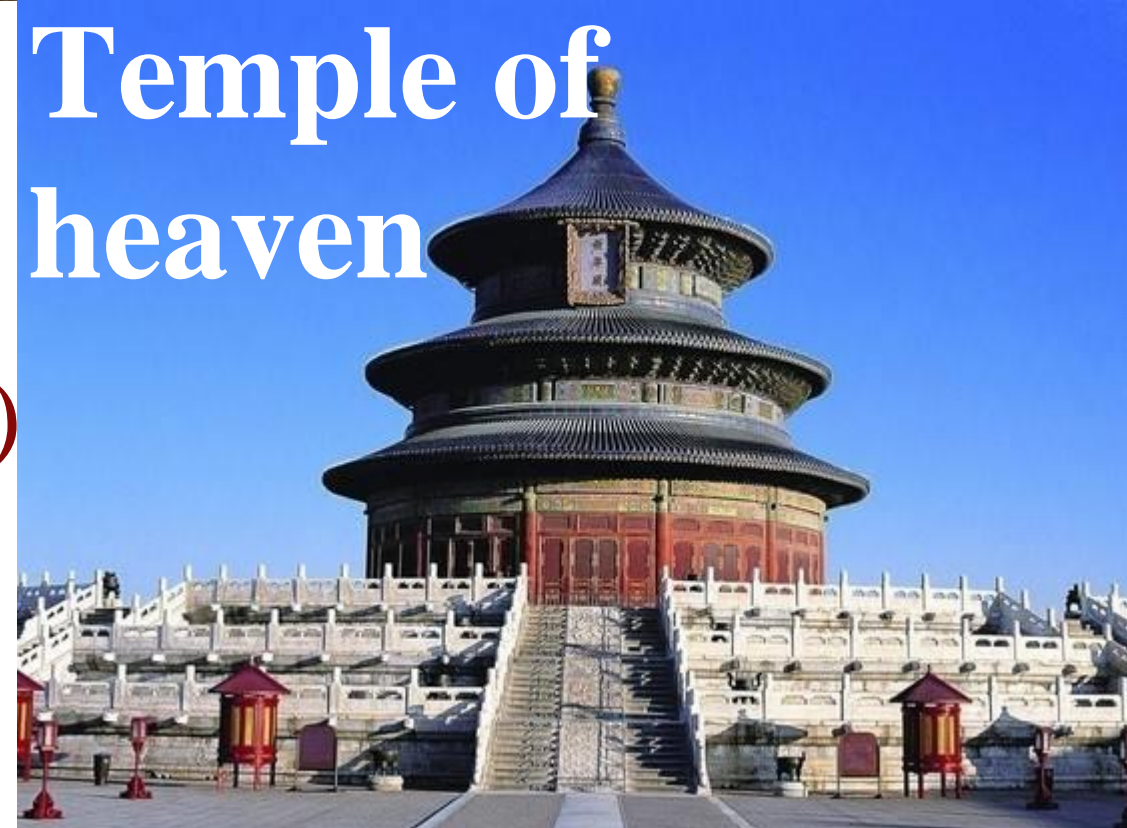
Status

- The work (production and test of GEB) on GE1/1 is complete
- The work (design, production and test of GEB; assemble and test of GEM) on GE2/1 ME0 is ongoing
 - Design and local tests are well in progress
 - Assembly of GEM is about to begin
- Good chance to participate in assembly, commissioning, operation



The job, the life

- Salary composition:
 - Basic 232K CNY per year (including accommodation allowance and end of year bonus)
 - Living allowance at CERN 2000 CHF per month
- [Boya fellowship](#) (need to apply for) can upgrade the salary to:
 - Basic 336K CNY per year (including accommodation allowance)
 - Living allowance at CERN 2000 CHF per month
- Living in Beijing
 - Lots of sunny days, many historical places of interests, beautiful campus, modern city
 - And the fastest delivery service 😊



Temple of heaven



Forbidden city



Our campus

The fastest delivery service 😊

An illustration of a yellow delivery truck with a driver, carrying a large yellow box with a running figure icon and an arrow, symbolizing fast delivery.