

# R1: LHC-ATLAS

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DMNet symposium on 13<sup>th</sup> September 2022

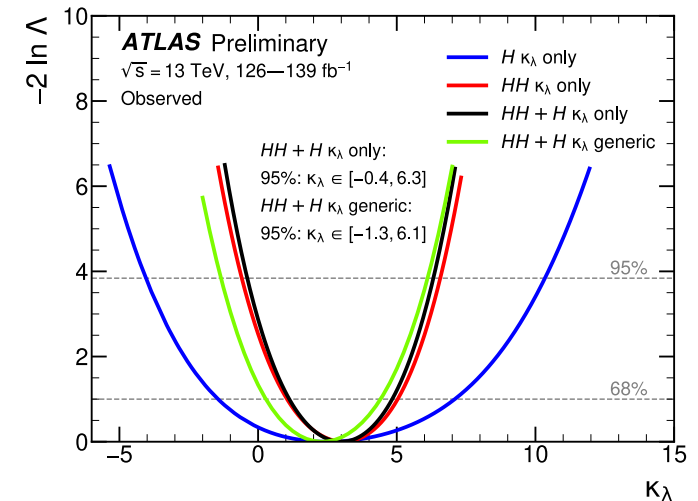
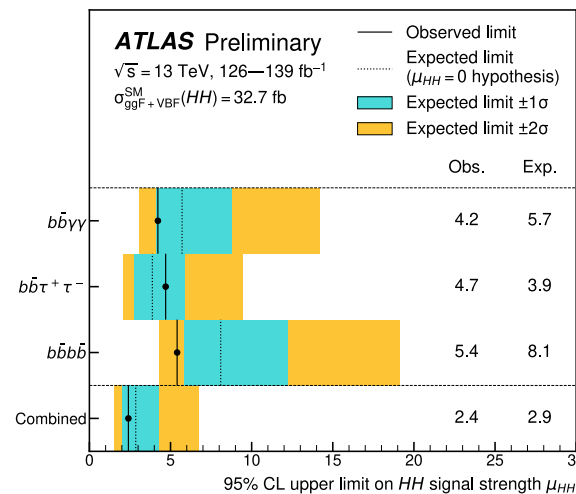
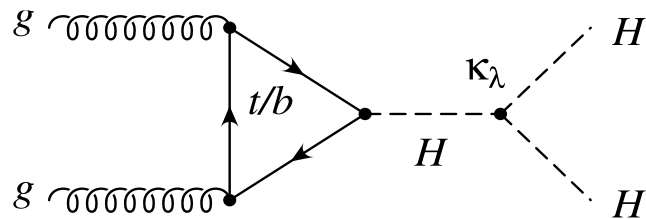
Yu Nakahama (KEK, KMI)

# Members

- Japan
  - Faculties: Nakahama (KEK, KMI), Hanagaki(KEK), Nagano(KEK), Tomoto (KEK, KMI), Horii (KMI), Sumida (Kyoto)
  - Students: O(5) PhD students, O(several) master students
- UK (Edinburgh)
  - Faculties: Christos, Yanyan (EW SUSY, dark-photon, LLP trigger etc)
  - A few PDs and O(5) PhD students
  - And, O(10) close collaborators from UK-ATLAS on trigger side.

# Scientific focus

- SUSY search widely: Long-Lived SUSY, RPV SUSY, model-independent search, EW SUSY
- Higgs potential studies, EFT interpretation, and BSM search



- Our results were shown at Higgs 10th anniversary symposium. Submission to Phys. Letter B soon.
- Hayashida-kun made critical contributions in all steps of the analysis ( $hh \rightarrow b\bar{b}b\bar{b}$ ), finally presenting at ICHEP and at many internal-approval talks.  
 Very exceptional achievement in a Japan student. (*Miracle by DMNet.*)
- Trigger developments for Long-Lived Particles i.e. less-explored phase spaces.

# Many dispatches in these difficult times

- CERN

- 8 long-term stays continuously. Currently, 2 dispatches.
  - > Expecting 2 PhDs this FY.
  - Effective for education as well.

- Conferences

- Two short-term stays for ICHEP.
- Huge thanks to all the effective & flexible supports by Prof. Hisano, KMI admin office, and DMNet.

Name (Institute, Position)	Place	Topic	Period (FY)
Hayashida (Nagoya, D3)	CERN	Higgs-self coupling best constraint	8 months (2021)
Nakahama (KEK, AP)	CERN	Higgs self-coupling, LLP, trigger commissioning	20 days (2021)
Wakida (Nagoya, D3)	CERN	LLP search	5 months (2022)
Sano (Kyoto, D1)	CERN	Commissioning of LLP Trigger	3 months (2022)
Asada (Nagoya, D3)	CERN	Top mass measurement	2 months (2022)
Nagano (KEK, AP)	CERN	LLP Trigger & <u>ATLAS Tracking trigger convener</u>	1 month (2022)
Hayashida (Nagoya, D4)	ICHEP, Italia	Presentation	one week (2022)
Wakida (Nagoya, D3)	ICHEP, Italia	Presentation	one week (2022)
Kawamoto (Kyoto, M2)	CERN	Feasibility of EW SUSY search with forward detector	1 month (2022)
Javier (KEK, PD)	CERN	Jet-tagging with ML & <u>ATLAS SUSY convener</u>	3 months (2022)

# Plan

- Expect to have several excellent PhD students and a few PDs from Kyoto, KEK and Nagoya, who have to research on site for actual work in the on-going LHC Run 3, leadership positions, and make physics publications with the existing LHC Run 2 data and beyond.
- Send excellent candidates with justifications to CERN and perhaps the UK/Edinburgh.
  - > Collaborative works and significant amount of physics publications.