

# Kevin Nash

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The supplemental document for resume<sup>1</sup>. Below are published data analyses to which I have a notable contribution. Additionally, presentations at large public conferences and a brief guide to the given software repositories.

## Publications

*Search for a  $W'$  boson decaying to a vector-like quark and a top or bottom quark in the all-jets final state (Full Run 2)*

The CMS Collaboration, **CMS Physics Analysis Summary (Paper in progress)**, [B2G-20-002](#)

*Identification of heavy, energetic, hadronically decaying particles using machine-learning techniques*

The CMS Collaboration, **CMS Paper**, [JINST 06 2020 P06005](#)

*Search for a  $W'$  boson decaying to a vector-like quark and a top or bottom quark in the all-jets final state*

The CMS Collaboration, **CMS Paper**, [JHEP 03 2019 127](#)

*Search for  $W' \rightarrow tb$  in the all-hadronic final state at  $\sqrt{s} = 13$  TeV*

The CMS Collaboration, **CMS Paper**, [JHEP 08 2017 029](#)

*Search for  $W' \rightarrow tb$  in proton-proton collisions at  $\sqrt{s} = 8$  TeV*

The CMS Collaboration, **CMS Paper**, [JHEP 02 2016 122](#)

*Search for the production of an excited bottom quark decaying to  $tW$  in proton-proton collisions at  $\sqrt{s} = 8$  TeV*

The CMS Collaboration, **CMS Paper**, [JHEP 01 2016 166](#)

*Search for a heavy resonance decaying to a top quark and a  $W$  boson at  $\sqrt{s} = 13$  TeV in the fully hadronic final state*

The CMS Collaboration, **CMS Paper (Submitted to JHEP)**, [Hep-Ex:2104.12853](#)

*Search for Physics beyond the Standard Model in Events with Overlapping Photons and Jets*

The CMS Collaboration, **CMS Paper**, [Phys. Rev. Lett. 123 241801 2019](#)

*The Phase-2 Upgrade of the CMS Tracker*

The CMS Collaboration, **CMS Technical Design Report**, [CDS \(Fig 3.23\)](#)

*Boosted Top Jet Tagging at CMS*

The CMS Collaboration, **CMS Physics Analysis Summary**, [CMS-PAS-JME-13-007](#)

*Search for new physics using the  $t\bar{t}$  invariant mass distribution in  $pp$  collisions at  $\sqrt{s} = 8$  TeV*

The CMS Collaboration, **CMS Paper**, [Phys. Rev. Lett. 111 211804 2013](#)

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<sup>1</sup>Resume: [DSapps/Resume2021](#)

## Presentations at Conferences

[\*Search for new resonances coupling to third generation quarks at CMS,\*](#)  
**ICHEP**, Seoul, KR., July 2018

[\*Studies of the MaPSA-light Module for the CMS Phase II Upgrade,\*](#)  
**Trento**, Munich, DE., February 2018

[\*Search for New Massive Resonances with Boosted Top Signatures at CMS,\*](#)  
**Boost**, Zurich, CH., July 2016

[\*Boosted top quarks in physics analyses,\*](#)  
**Boost**, London, UK., August 2014

## Code Examples

<https://github.com/knash>

**Maintained** (created and maintained by me)

AnomalyTools (Python, machine learning)

AEAnalyzer(Python, data analysis)

Educational (Python, machine learning)

FirstML (Python, machine learning)

NanoAODskimAna, THBtrees, MuMod\_Software, Wprime13TeV (Python, data analysis)

**Contributed** (forked with relevant contributions)

NanoHRT (Python, data analysis)

cmssw (C++, full scientific framework)

<https://gitlab.cern.ch/knash> (CMS password protected)

**Contributed** (forked with relevant contributions)

Ph2\_ACF (C++, full scientific framework),

customNano (Python, data analysis)