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The supplemental document for resume¹. 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](#)

¹Resume: [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)