



VISITAS VIRTUAIS

MASTER CLASS Hands ON

Dados Abertos

Recursos para atrair o interesse dos alunos? Temos!!

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CBPF – Centro Brasileiro de Pesquisas Físicas – Rio de Janeiro

No CMS desde 2013 e na equipe oficial de guias do CMS desde 2015



VISITAS VIRTUAIS da sala de controle até a caverna do CMS



VISITAS VIRTUAIS



CMS Virtual Visit with Brazil

29 August 2023
CERN
Europe/Zurich timezone

Video da visita do dia 29/08:

Enter your search term

<https://www.youtube.com/watch?v=mOk5IH4gblc>

- Overview
- CMS Guides
- Connection



Youtube (129 videos): @virtualvisitcms3825



CMS é o único experimento que promove visitas virtuais e presenciais ao subsolo (~ 90 m abaixo da superfície) mesmo no período de operação do LHC

CMS Virtual Visits - registration form

Please complete the following form to register for CMS Virtual Visits. All registration requests must be received at least four (4) working days prior to the Virtual Visit.

* Erforderlich

Your first name *

Meine Antwort

Your last name *

Meine Antwort

Your email address *

Meine Antwort

Please confirm your email address *

Meine Antwort

Your profile

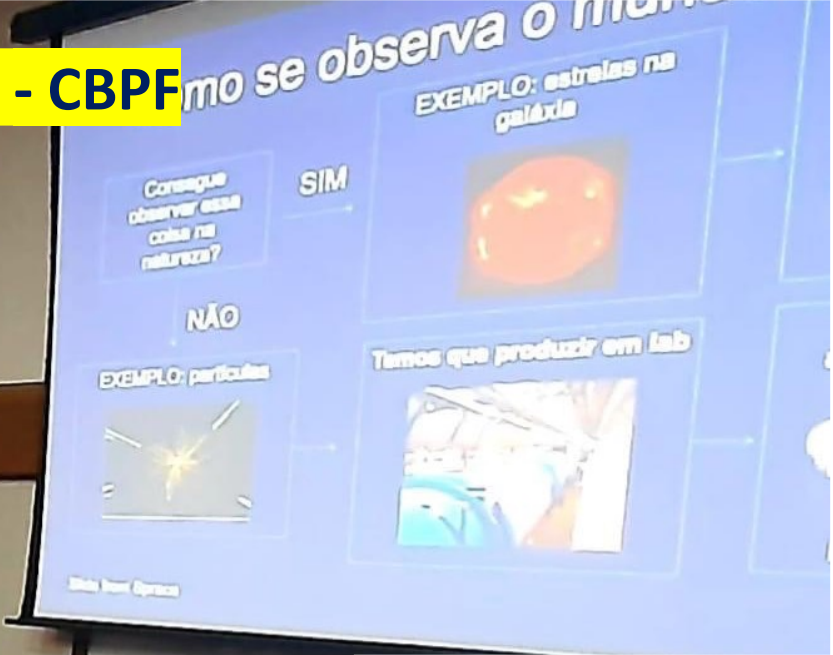
- Teacher/Professor
- Student
- Researcher

<https://cms.cern/index.php/interact-with-cms/virtual-visits>

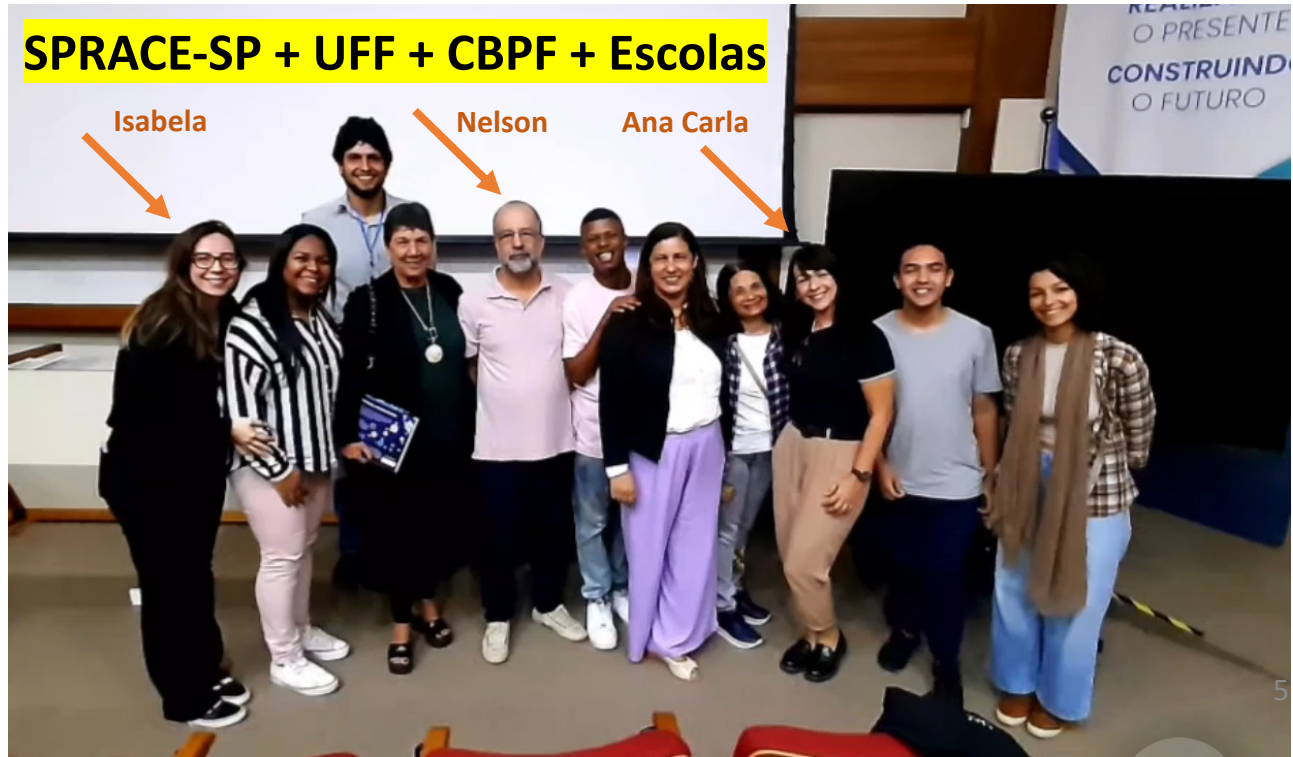


- Atividades e materiais de divulgação produzidos pelo SPRACE (São Paulo Research and Analysis Center)
 - **Revista em quadrinhos:** Detector CMS do LHC/CERN
 - **Livro: Bóson de Higgs** para professores e estudantes do Ensino Fundamental
 - **O Pôster das Partículas:** atualização da Tabela Periódica com os constituintes fundamentais da matéria
 - **Evento Internacional MasterClass (desde 2008):**
 - Universidades e Instituições de pesquisa abrem suas portas para o público do Ensino Médio
 - Alunos e professores são Físicos do CERN por um dia!
 - Participação simultânea com alunos de várias cidades europeias ou americanas
 - **Oficinas sobre as Partículas Elementares:** para professores de Ensino Médio
 - **SPRACE Game:** Jogo das Partículas. Gratuito! Disponível on-line
 - **Aplicativo sobre as Partículas Elementares** em português: gratuito! Para iOS e Android (em breve!)

MASTER CLASS Hands ON - CBPF



SPRACE-SP + UFF + CBPF + Escolas

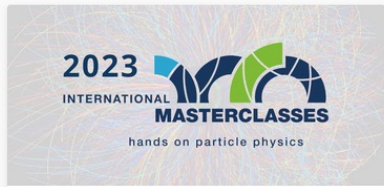


MASTER CLASS Hands ON-SPRACE

Edições 2023



© February 9, 2023
MasterClass 2023 – Feminino



© March 2, 2023
MasterClass 2023 – Iniciantes



© March 13, 2023
MasterClass 2023 – Avançado

A igualdade de gênero, na ciência e em outros setores da sociedade, é considerada pela ONU uma meta vital para o desenvolvimento das nações.

ONU declarou **11 de fevereiro** como sendo o **Dia Internacional das Mulheres e Meninas na Ciência**. Aproveitando essa oportunidade, o São Paulo Research and Analysis Center (SPRACE), em colaboração com a Organização Europeia para a Pesquisa Nuclear (CERN), realiza uma **edição especial do tradicional evento internacional MasterClass**.

Fixo: SPRACE-SP + UFF + CBPF + UERJ + UFABC + USP + Escolas Públicas e Privadas

Mais: Resende + Queluz + Mesquita + Juiz de Fora + Eunápolis (BA) + Salvador + Manaus + São Vicente (MT) +

Organizadores

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Past events

MASTERCLASS 2022 ABOUT EVENT >	MASTERCLASS 2021 ABOUT EVENT >	MASTERCLASS 2020 ABOUT EVENT >	MASTERCLASS 2019 ABOUT EVENT >
MASTERCLASS 2018 ABOUT EVENT >	MASTERCLASS 2017 1º MasterClass Internacional Feminino (2017)	MASTERCLASS 2016 ABOUT EVENT >	MASTERCLASS 2015 ABOUT EVENT >
MASTERCLASS 2014 ABOUT EVENT >	MASTERCLASS 2013 ABOUT EVENT >	MASTERCLASS 2012 ABOUT EVENT >	MASTERCLASS 2011 ABOUT EVENT >
MASTERCLASS 2010 ABOUT EVENT >	MASTERCLASS 2009 ABOUT EVENT >	MASTERCLASS 2008 ABOUT EVENT >	1º MasterClass organizado pelo SPRACE (2008)

MASTER CLASS Hands ON – detalhes na palestra do Nelson



Explore more than **three petabytes**
of open data from particle physics!

search examples: [collision datasets](#), [keywords:education](#), [energy:7TeV](#)

No Master Class Hands-On analisamos dados abertos

Explore

- [datasets](#)
- [software](#)
- [environments](#)
- [documentation](#)

Dados estão disponíveis e podem ser usados não somente nos cursos de Física mas para ensinar Estatística, Análise de Dados, Aprendizado de Máquina, Programação, Ambientes Virtuais, Containers, Repositórios (Gihub), ...

Focus on

- [ATLAS](#)
- [ALICE](#)
- [CMS](#)
- [LHCb](#)
- [OPERA](#)
- [PHENIX](#)
- [Data Science](#)



include on-demand datasets

Filter by type

- Dataset 42
 - Derived 42
- Documentation 20
 - About 2
 - Activities 11
 - Guide 5
 - Help 2
 - News 7
- Software 1
 - Tool 1
 - Workflow 1

Filter by experiment

- ATLAS 3
- CMS 65

Filter by year

- 2010 16
- 2011 18
- 2012 7

Sort by: Best match asc.

Display: detailed 20 results

Found 70 results.

Higgs to two photons from 2011

This document contains 10 gamma-gamma Higgs candidate events (with an invariant mass between 120-130 GeV). Events have been released by CMS for use in education and outreach.

Data was selec...

Dataset Derived CMS

Higgs to four leptons from 2011

This document contains 3 Higgs candidate events (with an invariant mass between 120-130 GeV), where Higgs decays to four leptons. Events have been released by CMS for use in education and outreach....

Dataset Derived CMS

Higgs candidate events for use in education and outreach

This document contains Higgs candidate events (with an invariant mass between 120-130 GeV)⁹ that have been released by CMS for use in education and outreach: 10 gamma-gamma events



CMS ×

include on-demand datasets

Filter by type

- ▼ Dataset 8362
 - Collision 224
 - Derived 144
 - Simulated 7994
- ▼ Documentation 46
 - About 4
 - Activities 13
 - Authors 3
 - Guide 20
 - Help 2
 - Policy 3
 - Report 1
- ▼ Environment 38
 - Condition 13
 - VM 9
 - Validation 16
- News 10
- ▼ Software 42
 - Analysis 16

Sort by:

Display:

Found 12102 results.

CMS Simulated Dataset Names

What is the “simulated dataset” name? It’s the part of the dataset name before the second 'slash', i.e. for the dataset...

[Documentation](#) [Guide](#) [CMS](#)

CMS 2011/2012 Virtual Machines: How to install

The CMS-specific VM includes the ROOT framework and CMSSW. Follow the instructions below to setup a CERN Virtual Machine on your computer for 2011-2012 CMS Open Data. Then, go to Getting Started with CMS data.

[Documentation](#) [Guide](#) [CMS](#) [VM](#)

Testing the CernVM

The CMS-specific CERN Virtual Machine has been tested on several operating systems, VM softwares and hardware configurations. Below you will find a full list of tested machines and configurations, along with issues faced during testing.

Higgs-to-four-lepton analysis example using 2011-2012 data

 Jomhari, Nur Zulaiha ;  Geiser, Achim ;  Bin Anuar, Afiq Aizuddin

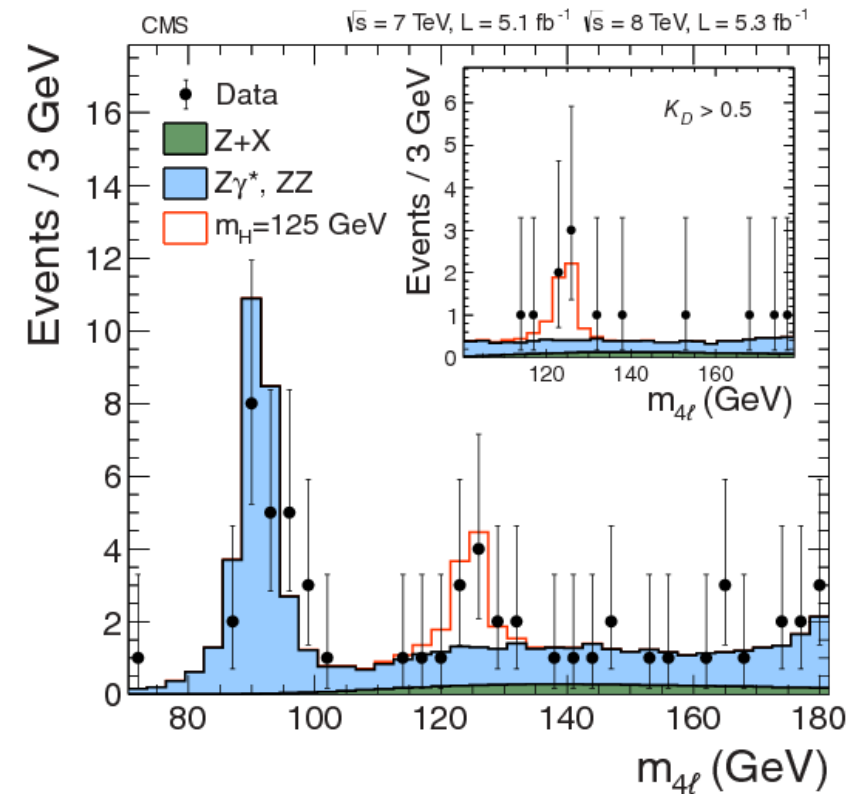
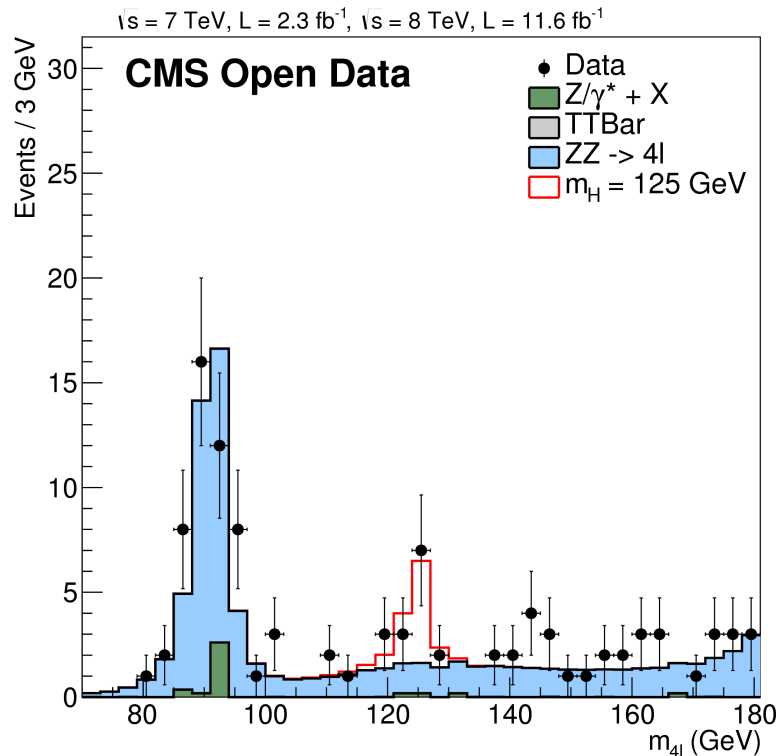
Cite as: Jomhari, Nur Zulaiha; Geiser, Achim; Bin Anuar, Afiq Aizuddin; (2017). Higgs-to-four-lepton analysis example using 2011-2012 data. CERN Open Data Portal. DOI: [10.7483/OPENDATA.CMS.JKB8.RR42](https://doi.org/10.7483/OPENDATA.CMS.JKB8.RR42)

[Software](#) [Analysis](#) [Workflow](#) [CMS](#) [CERN-LHC](#)

<https://opendata.cern.ch/record/5500>

Artigo original do Higgs

<https://inspirehep.net/literature/1124338>

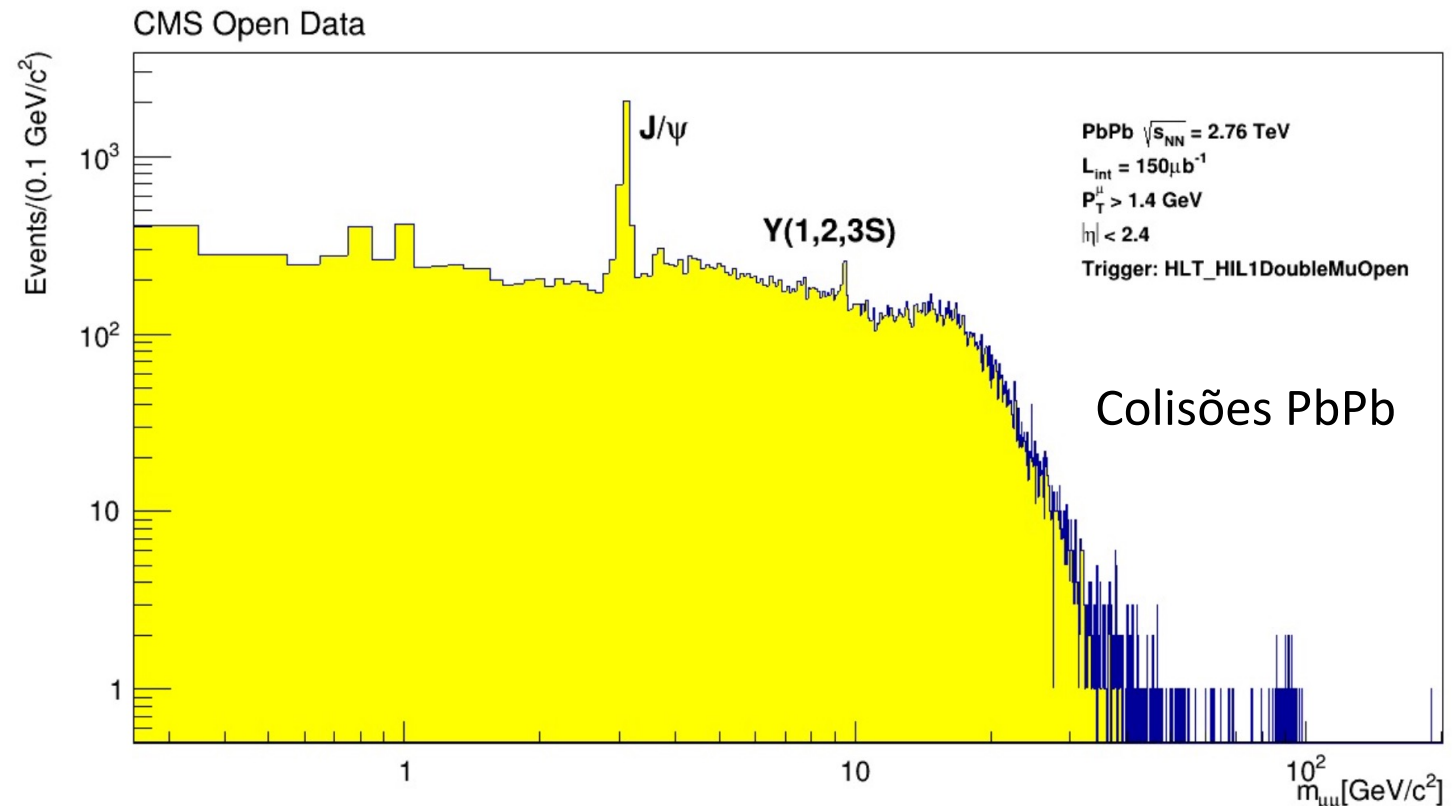
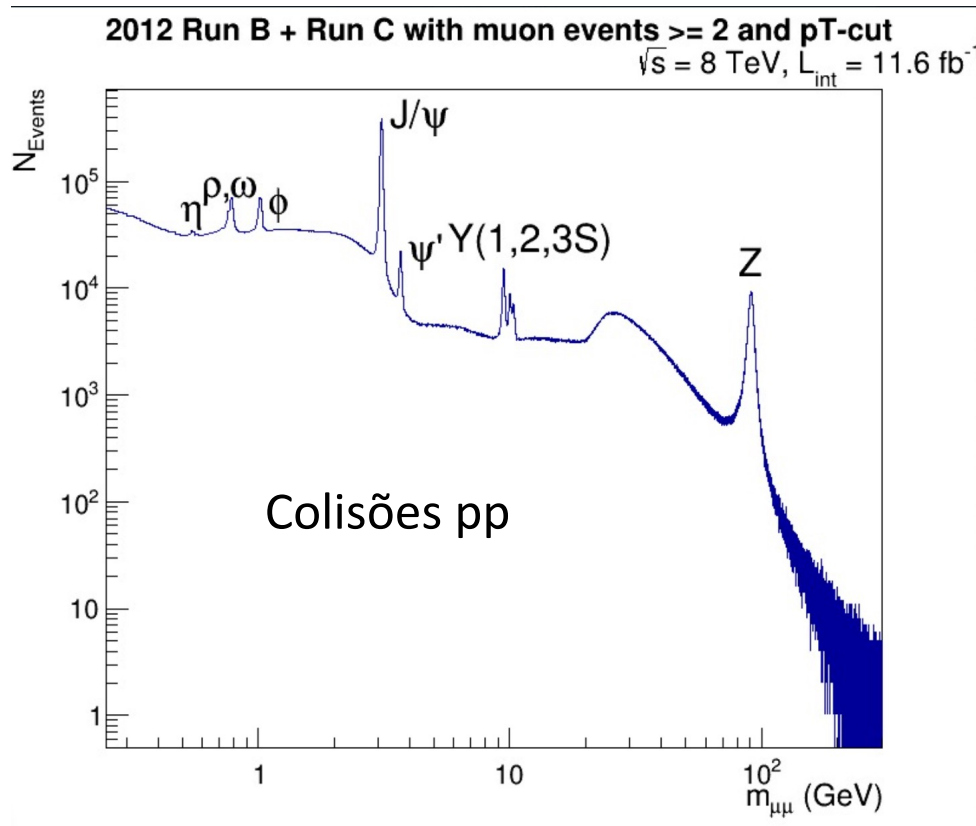


HIDiMuon primary dataset in RECO format from the 2.76 TeV Pb-Pb run of 2011 (/HIDiMuon/HIRun2011-04Mar2013-v1/RECO)

/HIDiMuon/HIRun2011-04Mar2013-v1/RECO, CMS collaboration

Cite as: CMS collaboration (2020). HIDiMuon primary dataset in RECO format from the 2.76 TeV Pb-Pb run of 2011 (/HIDiMuon/HIRun2011-04Mar2013-v1/RECO). CERN Open Data Portal. DOI:[10.7483/OPENDATA.3XX5.FRZS](https://doi.org/10.7483/OPENDATA.3XX5.FRZS)

<http://opendata.cern.ch/record/14012>



Feito por Thiago Rangel (aluno de IC – CBPF/UERJ - MasterClass Hands-On)



Links úteis sobre o que vimos nessa apresentação sobre o CMS:

<https://home.cern/science/experiments/cms>

<https://www.youtube.com/@CMSExperiment>

<https://www.linkedin.com/company/cmscollaboration>

<https://www.facebook.com/CMSExperiment>

<https://twitter.com/CMSExperiment>

<https://opendata.cern.ch>

<https://cms.cern/index.php/interact-with-cms/virtual-visits>

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