LABORATÓRIO DE INSTRUMENTAÇÃO
E FÍSICA EXPERIMENTAL DE PARTÍCULAS
partículas e tecnologia

IV LIP Summer Student Program / 2020

Final Workshop

Liliana Apolinário

(on behalf of the Organisers)

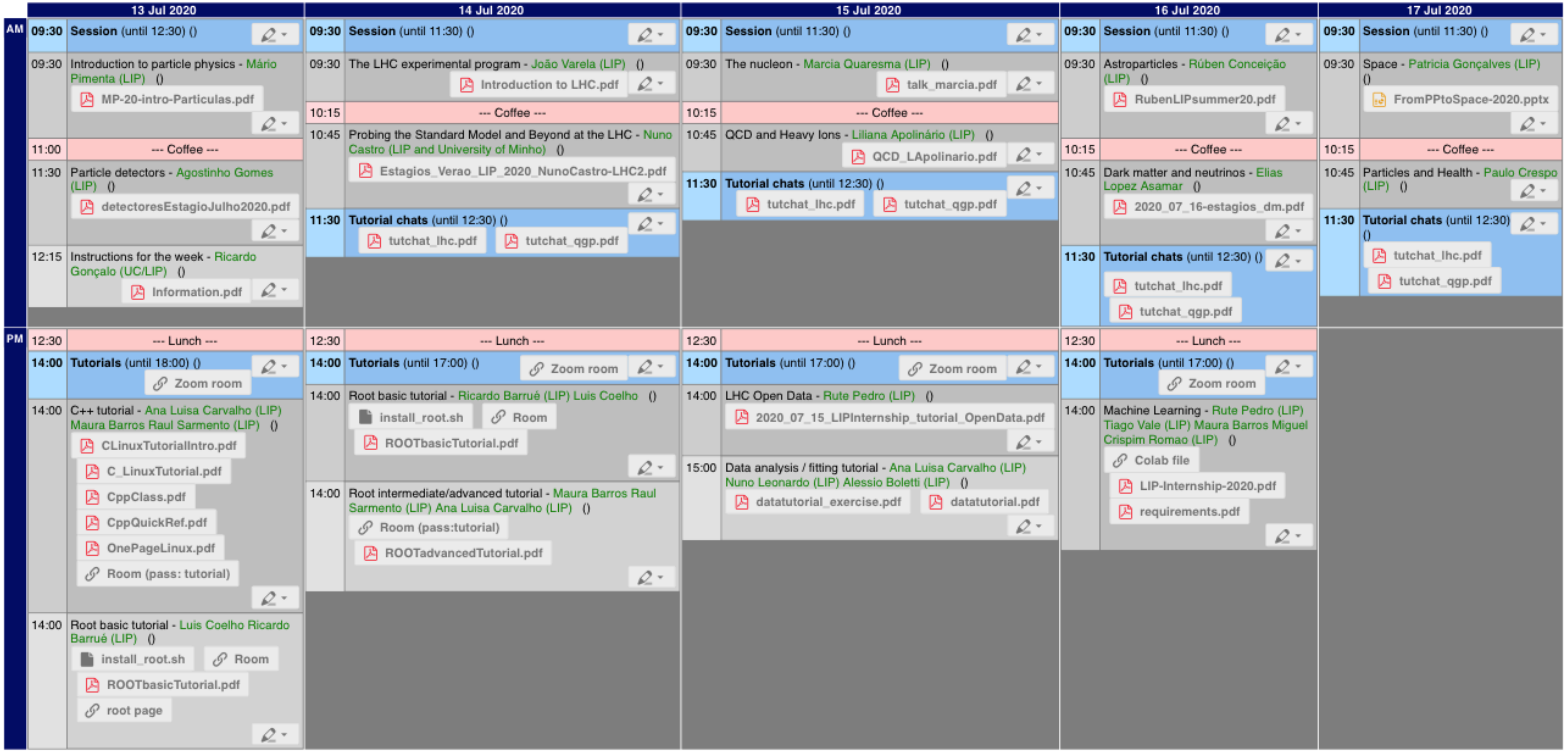
Braga, Coimbra, Lisbon — September 10-11, 2020

Covid-19 Style!

Thank you for taking part!

Foremost to You, **the Students**, for spending the summer engaging in research work with us.
The Supervisors for designing the actual research projects and for mentoring them.
Everyone at LIP involved in the organisation (inc. ECO, IT, directorate, secretariat, etc)

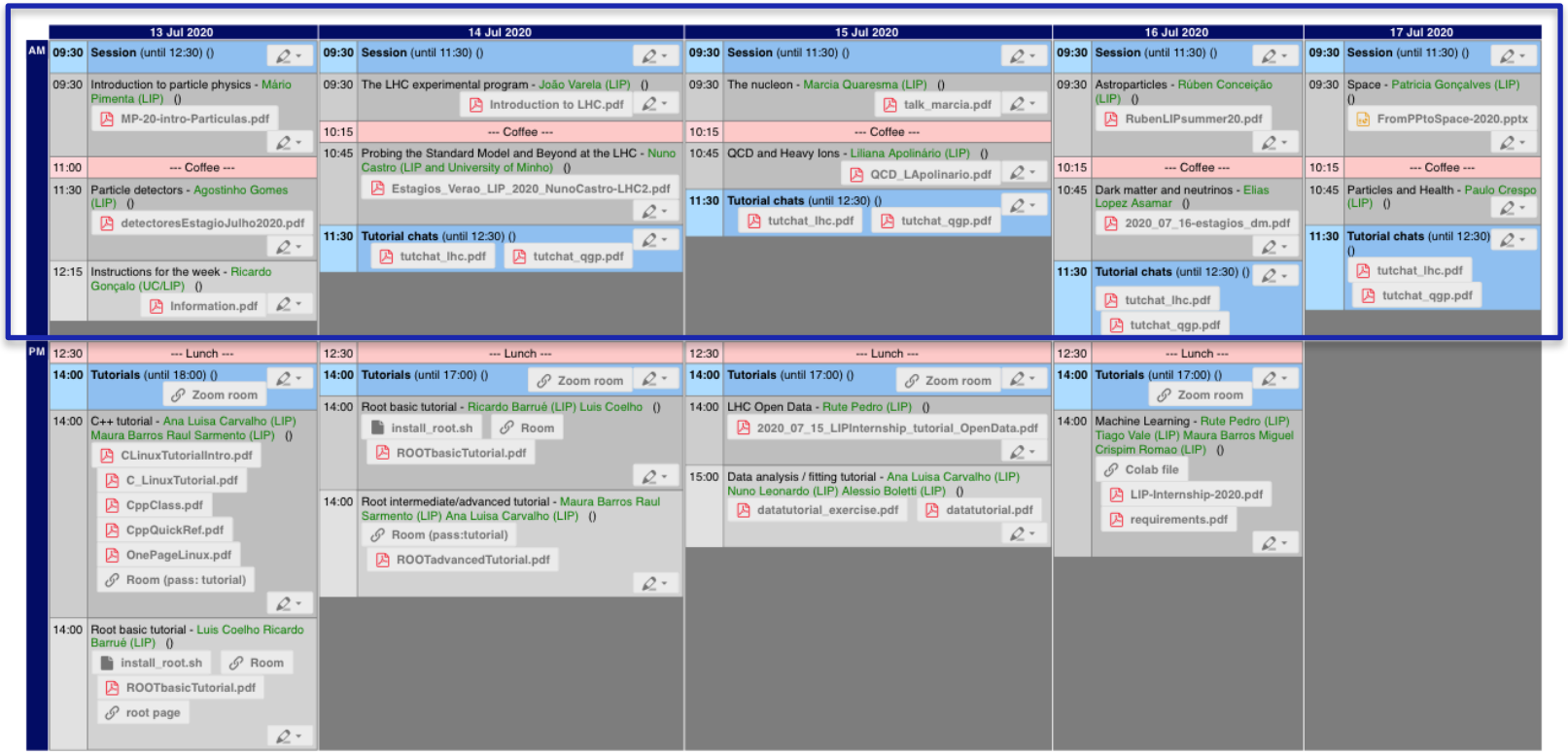
Busy (online) Summer



	13 Jul 2020	14 Jul 2020	15 Jul 2020	16 Jul 2020	17 Jul 2020
AM	09:30 **Session** (until 12:30) () 09:30 Introduction to particle physics - Mário Pimenta (LIP) () MP-20-intro-Particulas.pdf 11:00 --- Coffee --- 11:30 Particle detectors - Agostinho Gomes (LIP) () detectoresEstagioJulho2020.pdf 12:15 Instructions for the week - Ricardo Gonçalo (UC/LIP) () Information.pdf	09:30 **Session** (until 11:30) () 09:30 The LHC experimental program - João Varela (LIP) () Introduction to LHC.pdf 10:15 --- Coffee --- 10:45 Probing the Standard Model and Beyond at the LHC - Nuno Castro (LIP and University of Minho) () Estagios_Verao_LIP_2020_NunoCastro-LHC2.pdf 11:30 **Tutorial chats** (until 12:30) () tutchat_lhc.pdf tutchat_qgp.pdf	09:30 **Session** (until 11:30) () 09:30 The nucleon - Marcia Quaresma (LIP) () talk_marcia.pdf 10:15 --- Coffee --- 10:45 QCD and Heavy Ions - Liliana Apolinário (LIP) () QCD_LApolinario.pdf 11:30 **Tutorial chats** (until 12:30) () tutchat_lhc.pdf tutchat_qgp.pdf	09:30 **Session** (until 11:30) () 09:30 Astroparticles - Rúben Conceição (LIP) () RubenLIPsummer20.pdf 10:15 --- Coffee --- 10:45 Dark matter and neutrinos - Elias Lopez Asamar () 2020_07_16-estagios_dm.pdf 11:30 **Tutorial chats** (until 12:30) () tutchat_lhc.pdf tutchat_qgp.pdf	09:30 **Session** (until 11:30) () 09:30 Space - Patricia Gonçalves (LIP) () FromPPtoSpace-2020.pptx 10:15 --- Coffee --- 10:45 Particles and Health - Paulo Crespo (LIP) () 11:30 **Tutorial chats** (until 12:30) () tutchat_lhc.pdf tutchat_qgp.pdf
PM	12:30 --- Lunch --- 14:00 **Tutorials** (until 18:00) () Zoom room 14:00 C++ tutorial - Ana Luísa Carvalho (LIP) Maura Barros Raul Sarmento (LIP) () CLinuxTutorialIntro.pdf C_LinuxTutorial.pdf CppClass.pdf CppQuickRef.pdf OnePageLinux.pdf Room (pass: tutorial) 14:00 Root basic tutorial - Luis Coelho Ricardo Barruè (LIP) () install_root.sh Room ROOTbasicTutorial.pdf root page	12:30 --- Lunch --- 14:00 **Tutorials** (until 17:00) () Zoom room 14:00 Root basic tutorial - Ricardo Barruè (LIP) Luis Coelho () install_root.sh Room ROOTbasicTutorial.pdf 14:00 Root intermediate/advanced tutorial - Maura Barros Raul Sarmento (LIP) Ana Luisa Carvalho (LIP) () Room (pass:tutorial) ROOTadvancedTutorial.pdf	12:30 --- Lunch --- 14:00 **Tutorials** (until 17:00) () Zoom room 14:00 LHC Open Data - Rute Pedro (LIP) () 2020_07_15_LIPInternship_tutorial_OpenData.pdf 15:00 Data analysis / fitting tutorial - Ana Luisa Carvalho (LIP) Nuno Leonardo (LIP) Alessio Boletti (LIP) () datatutorial_exercise.pdf datatutorial.pdf	12:30 --- Lunch --- 14:00 **Tutorials** (until 17:00) () Zoom room 14:00 Machine Learning - Rute Pedro (LIP) Tiago Vale (LIP) Maura Barros Miguel Crispim Romao (LIP) () Colab file LIP-Internship-2020.pdf requirements.pdf	

Busy (online) Summer

Introductory Lectures 13th to 17th July 2020
every morning



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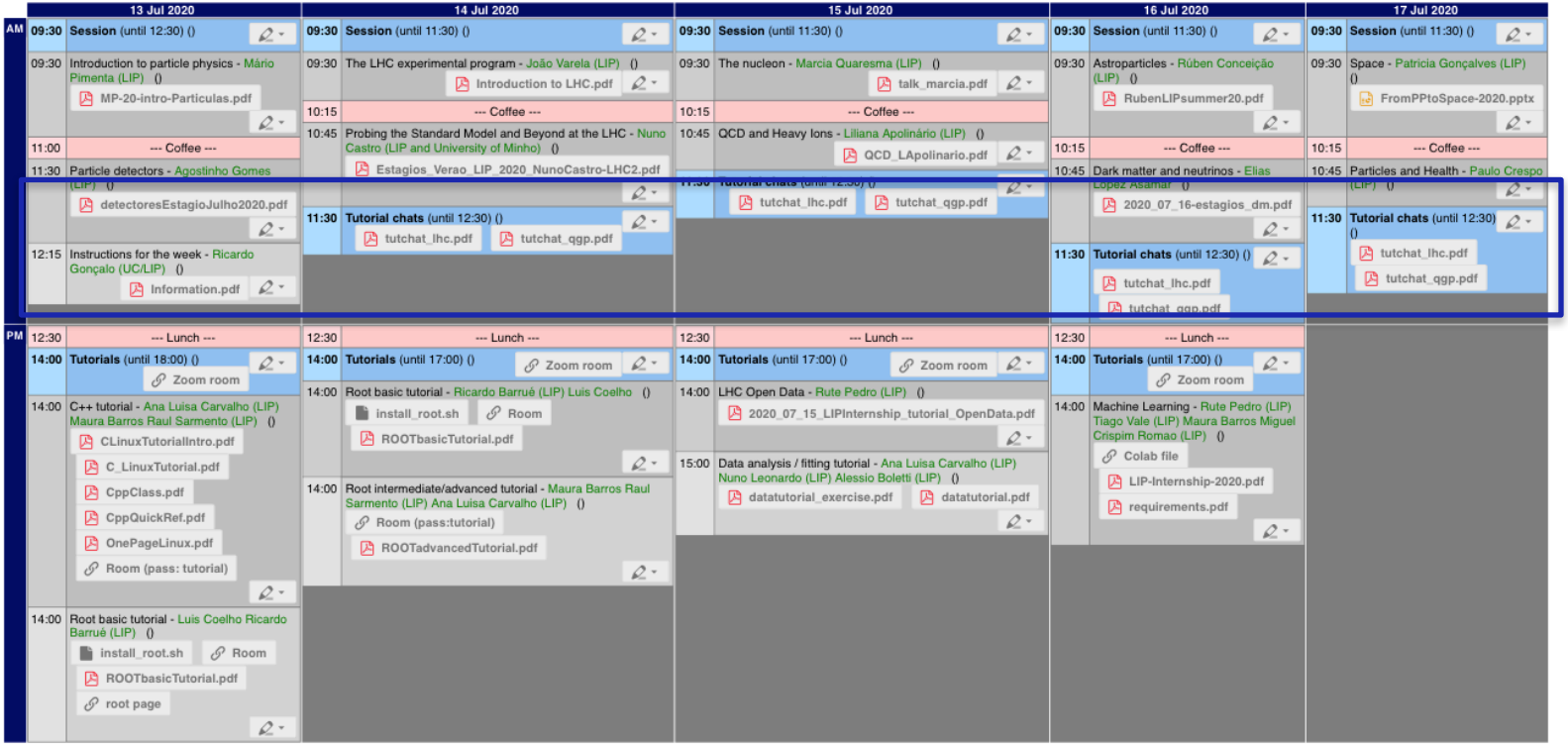
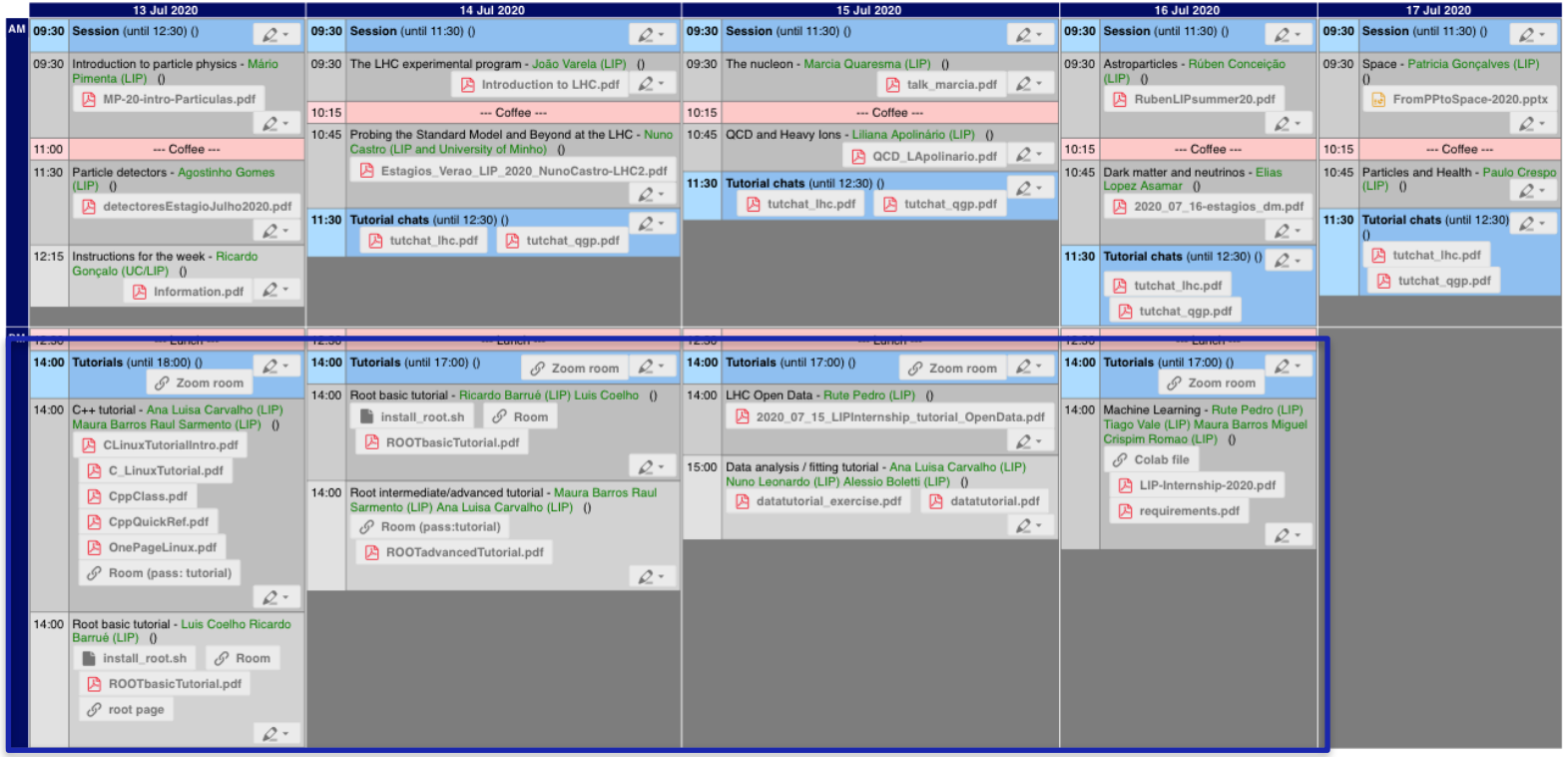
Tutorial chats



Busy (online) Summer

Hands-on exercises



Busy (online) Summer

Introductory Lectures (vast program)

- Particle Physics
- Detector Physics
- SM and BSM
- QCD
- Astroparticles
- Dark Matter and Neutrinos
- Space
- Particles and health

Hands-on exercises

- C/C++
- ROOT
- LHC Open Data
- Data Analysis/Fitting
- Machine Learning

August Chats (Student seminar weekly Sessions)

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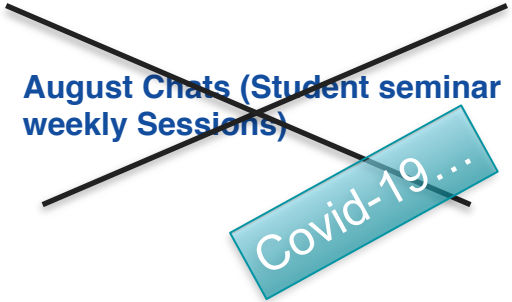

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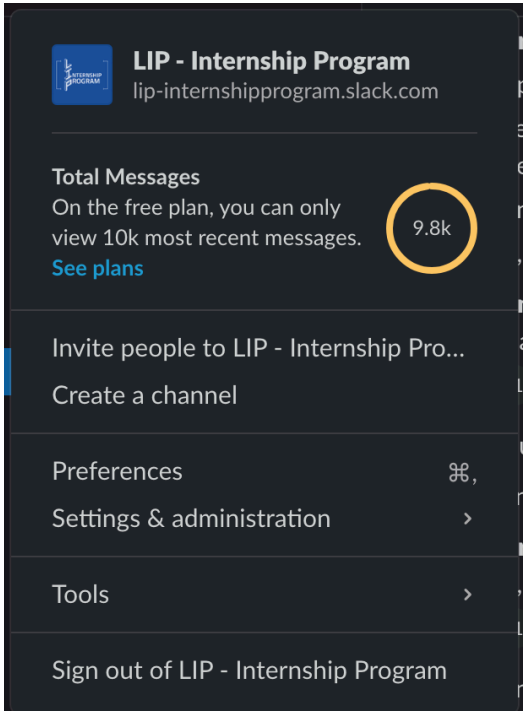

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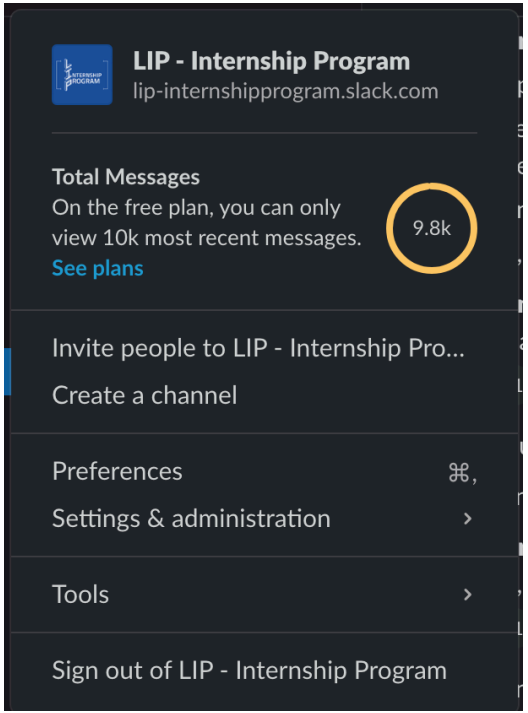

We hope you have enjoyed!

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Approaching to an end…
but before that…

LABORATÓRIO DE INSTRUMENTAÇÃO
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Welcome to our Final Workshop!!

Final Workshop

- 2 days of presentations
- 8 sessions
- 1 report per project

- 15 min per report
  (try to stay within time)

- +5 min discussion
  (do lot's of questions!)

Braga + Coimbra + Lisbon
Videoconference (zoom)

Final Workshop | LIP Internship Program'2020

10 Sep 2020, 00:00 → 11 Sep 2020, 18:40 Europe/Lisbon

Zoom (Online)

10 Sep 2020

09:35	**Introduction** (until 09:50) (Zoom)
09:50	**Session I** - Rúben Conceição (LIP) (until 10:50) (Zoom)
09:50	37 - Raios cósmicos num só dia (Cosmic Rays in a single day) - Jorge Mariano Fernandes Gouveia Miguel Pereira (Zoom)
10:10	4 - Muografia de um Edifício (Building muography) - Luis Amorim Magda Duarte (Zoom)
10:30	12 - Muografia: usar muões cósmicos para estudar grandes estruturas (Muography: using cosmic muons to study large structures) - Joana Pereira Gonçalo Paiva Gouveia Diogo Gonçalves (Zoom)
10:50	--- Coffee Break ---
11:10	**Session II** - Raul Sarmento (LIP) (until 12:30) (Zoom)
11:10	30 - Development of a next-generation detector concept to detect astrophysical gamma-rays - Tomás Soares e Ribeiro Pedro Costa (Zoom)
11:30	31 - Gamma-ray astrophysics with current and future detectors - António Vítor Monsanto da Rocha dal Prà Maschio Camila Costa (Zoom)
11:50	19 - Muon tomography on Earth and on Mars - Henrique Miguel Álvares Pereira Lima Gonçalves (Zoom)
12:10	18 - Exploring the Hidden Sector of Particle Physics at the SHiP experiment - Raul Santos Francisco Miguel Marecos Militão Rosado Safara (Zoom)
12:30	--- Lunch ---
14:20	**Session III** - Pedro Assis (LIP) (until 16:00) (Zoom)
14:20	20 - Functional test studies for the Engineering Qualification Model of RADEM, the radiation monitor for the ESA JUICE mission, using Monte Carlo analysis - Nuno Alberto Ferreira Taborda (Zoom)
14:40	15 - Propriedades óticas de plásticos cintiladores para dosimetria de elevada resolução utilizando o FLUKA e dados. (Optical properties of plastic scintilators for high-resolution dosimetry using FLUKA and data) - Lia Pereira (Zoom)
15:00	13 - Testes do novo detetor de tempo de voo para experiência HADES. (Tests of the new time-of-flight detector for the HADES experiment.) - Manuel Veiga Eduardo Neves (Zoom)
15:20	10 - Observação de muões cósmicos (Cosmic muons observation) - Joana Carolina Duarte Mota Francisco Casalinho Matilde de Matos Simões (Zoom)
15:40	26 - Optical fibers applications - Eduardo José Ferreira Batista (Zoom)
16:00	--- Coffee Break ---
16:20	**Session IV** - Valentina Lozza (LIP) (until 17:40) (Zoom)
16:20	8 - Simulaçoes de Monte Carlo para preparar a procura de matéria escura na experiência LZ (Monte Carlo simulations to prepare for dark matter searches at the LZ experiment) - Pedro Miguel Patrício Fernandes Tomás Ramos Pinto de Sousa (Zoom)
16:40	9 - Decaímento beta duplo sem neutrinos (Neutrinoless double beta decay) - Helena Lessa Macedo Inês Rodrigues Sequeira Tiago Martins (Zoom)

11 Sep 2020

09:30	**Session V** - Marcia Quaresma (LIP) (until 10:50) (Zoom)
09:30	6 - Heavy Flavour Jets Production in Pb+Pb Collisions with the ATLAS Detector - Vicente Mendes (Zoom)
09:50	27 - Exploring the fast evolution of the Quark-Gluon Plasma - Ema Alexandra Guilherme Mendes Marcelo Goncalves (Zoom)
10:10	28 - Hadron structure from nonperturbative QCD - Eduardo Pereira de Oliveira Bento Ferreira Heitor Munhoz Österdahl (Zoom)
10:30	29 - Heavy quark as probes of the primordial plasma - Artur Matos Semião Maria Carolina Feliciano Faria (Zoom)
10:50	--- Coffee Break ---
11:10	**Session VI** - Gernot Eichmann (LIP) (until 12:30) (Zoom)
11:10	16 - Estudo das propriedades dos hadrões através das suas interações na experiência AMBER (Study of hadron properties through their interactions at the AMBER experiment) - Adriana Alexandra Lopes Monteiro (Zoom)
11:30	23 - O charme escondido na Experiência COMPASS do CERN (The hidden charm in the COMPASS experiment at CERN) - Francisco Ramos Feliciano Catarina Miguel Caldas Pereira Corte-Real (Zoom)
11:50	32 - Optimization of scintillator-fibre coupling for future detectors - Mafalda Nunes Rudnei Machado Miguel de Oliveira Lameiras (Zoom)
12:10	24 - Sistema de alta tensão do Tilecal (Tilecal high voltage system) - Ricardo José Matoza Pires (Zoom)
12:30	--- Lunch ---
14:20	**Session VII** - Patricia CONDE MUIñO (LIP) (until 16:00) (Zoom)
14:20	25 - COMPASS acceptance obtained using Machine Learning Techniques - Maria Francisca Queirós (Zoom)
14:40	33 - Studying Jet Quenching Phenomenon using Deep Learning on Low-Level Variables - Filipe Paes de Miranda Szolnoky da Cunha (Zoom)
15:00	1 - Métodos avançados de análise de dados na pesquisa de matéria escura associada ao quark top no Large Hadron Collider do CERN (Advanced data analysis methods in dark matter searches associated with top quark in the Large Hadron Collider at CERN) - Miguel Caçador Peixoto (Zoom)
15:20	2 - Estudo das incertezas associadas ao uso de redes neuronais profundas em pesquisas de quarks vetoriais no Large Hadron Collider do CERN (Study of the uncertainties associated with the use of deep neural networks in vector quarks searches in the Large Hadron Collider at CERN) - Gilberto Rui Nogueira Cunha (Zoom)
15:40	22 - Machine learning methods to improve boosted Higgs boson tagging at ATLAS - Vladlen Galetsky (Zoom)
16:00	--- Coffee Break ---
16:20	**Session VIII** - Inês Ochoa (until 17:40) (Zoom)
16:20	11 - Fisica do quark top e do bosão de Higgs (Top quark and Higgs Boson Physics) - Mafalda Neves Pena de Morais Sarmento Nuno Miguel Ferreira Campos Nuno Miguel Rebelo Brito (Zoom)
16:40	17 - Study of the Higgs Properties at ATLAS - Freya Haslam (Zoom)
17:00	14 - Physics with forward protons in the CMS experiment at the CERN LHC - Hilberto Silva (Zoom)

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Let us start!

and keep an eye for further instructions (Friday last talk)

(Write-up, feedback and final certificates)