on behalf of

IPPOG and IMC Steering Group
Heavy-ion research and heavy-ion therapy

Heavy-ion Physicist, involved with medical applications of heavy-ions for cancer therapy

Virtual visit: ALICE heavy-ion experiment at CERN.
Pioneered heavy-ion (carbon) therapy for cancer tumours in Europe (90s).
Hands on Particle Physics Masterclasses

Schedule 2021

At the end of each Masterclass day a videoconference between the institutes and with moderators at CERN, at Fermilab, TRIUMF, KEK, or GSI is established. The schedules for 2021 will be created early in 2021.

https://indico.cern.ch/event/840212/
# PTMC IMC Schedule

**07.03. - 12.03.2022**

*Online week for remote Masterclasses! Students connect individually to the videoconference*

<table>
<thead>
<tr>
<th>Day</th>
<th>Mon, Mar 07</th>
<th>Tue, Mar 08</th>
<th>Wed, Mar 09</th>
<th>Thu, Mar 10</th>
<th>Fri, Mar 11</th>
<th>Sat, Mar 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>moderators</strong></td>
<td>Alessandra</td>
<td>Eleanor</td>
<td>Andrei</td>
<td>Martin</td>
<td>Joshua</td>
<td>Andre</td>
</tr>
<tr>
<td>Napoli</td>
<td>Napoli</td>
<td>Rome, Tre</td>
<td>Pisa</td>
<td>Strasbourg</td>
<td>Coimbra</td>
<td>Novi Sad</td>
</tr>
<tr>
<td>Krakow</td>
<td>Oujda</td>
<td>Lecce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erfangen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **topic**    | VC 2: CMS | VC 2: ALICE | VC 2: CMS | VC 2: LHCb | VC 2: ALICE |
| **moderators** | Alejandro | Anders | Jesus | David F. | Despina |
| Muhammad Alib. | Stefania | Michael | Maria | Giacomo |           |
| Stefane | Michael | Stefania |           |           |           |
| Trieste | Tehran, TiS | Split | Bonn | Mexico, UNAM |            |
| Benha | Torin | Bari | Chania, EKFE |            |            |
| Athens, Demokritos | Florence | Frascati | Jammu |            |            |
| Tehran IPM | Birmingham | Thessaloniki, EKFE |            |            |            |
| Ferrara | Sarajevo |            |            |            |            |
IMC Statistics 2019

Motivate the next generations of scientists!

Brings scientific methods and real data to schools!

Coordination QuarkNet / TU Dresden

- 51 institutes (48)
- 54 LHC Masterclasses (50)
  - 22 ATLAS (19)
  - 32 CMS (31)
    (Incl. TRIUMF program)
- 12 MINERvA Masterclasses

- 188 institutes (177)
- 266 LHC Masterclasses (257)
  - 30 ATLAS W (35)
  - 101 ATLAS Z (104)
  - 64 CMS (58)
  - 41 LHCb (39)
  - 27 ALICE SP (18)
  - 3 ALICE R_AA (3)

Flagship project of IPPOG, the International Particle Physics Outreach Group

54 countries
255 institutes
15 000 students
5 weeks in 2019

IMC 2021:
11.2.2021 – 27.3.2021
The concept and programme of an IMC day

Every year, during the months of February-March, school-children (15-19 year old) are invited to an institute of their area. 2-5 institutes per day performing the same programme.

**LOCAL TIME: ACTIVITY**

- **8:30 - 9:00** Registration and Welcome
- **9:00 - 10:00** Introductory lectures
- **10:30 - 11:30** Visit of a lab or experiment
- **12:00 - 13:00** Lunch
- **13:00 - 15:00** Hands-on session
- **15:00 - 16:00** Discuss results locally
- **16:00 - 17:00** Video conference

The aim is to get insight into topics and methods of research.

Scientists for a day!!
From first ALICE MC in Sarajevo in 2019 to hundreds of students!!
New PTMC and Treatment Planning

First Local Test: GSI Feb 2019

Web page: UNSA students at CERN, Aug 2019

International Pilot: CERN, GSI, DKFZ April 2019

- First local test: GSI Feb 2019
- First International Pilot: GSI, Heidelberg DKFZ, CERN Apr 2019
- IMC Steering Group Approval: GSI May 2019
- Web pages: Sarajevo Uni students Aug 2019 at CERN
- CERN Open days: Sarajevo Uni students Sep 2019
# New PTMC 2022 BiH Schedule

| Friday 18 March 2022, Video Conference: |  |
|----------------------------------------|  |
| **UNIMI – INFN, Milano, Italy**        | Flavia Groppi |
| **UNICAL - INFN, Cosenza, Italy**      | Marcella Capua |
| **University of Tuzla, BiH**            | Hedim Osmanovic |
| **UNSA, Sarajevo, BiH**                 | Azra Gazibegovic |
| **GSI, Darmstadt, Germany**             | C. Graeff |
| **Yiota Foka (GSI), Aris Mamaras**     | Yiota Foka (GSI), Aris Mamaras |
| **(AUTH) Albana Topi (GSI)**            | (AUTH) Albana Topi (GSI) |
| **Damir Skrijelj (UNSA), Deianira**    | Damir Skrijelj |
| **Fejzaj (Uni. Brescia), Aris**        | Fejzaj (Uni. Brescia), Aris |
| **Mamaras (AUTH)**                      | Mamaras (AUTH) |

[https://indico.cern.ch/event/1122782](https://indico.cern.ch/event/1122782)
Heavy-ion research and heavy-ion therapy

Pb-Pb at 5.5 TeV
pp at 14 TeV

fundamental science
QGP studies

88-430 MeV/u carbon
50-221 MeV/u protons

applied science
medicine

Credit: HIRL-Japan
Credit: CERN
Credit: HIT Heidelberg
Credit: T. Nomiya, NIRS Japan