

## Preface

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This issue of EPJ Web of Conferences collects the proceedings of the 21<sup>st</sup> Joint Workshop on Electron Cyclotron Emission and Electron Cyclotron Resonance Heating, which was held on the premises of the ITER Organization, Cadarache, France, on June 20-24, 2022.

Due to the pandemic, the meeting took place four years after the previous one, hosted by IPP Greifswald in 2018, while the usual cycle for this workshop series is two years. Given the specific nature of the EC workshop, intended as a forum for a direct exchange of information, as well as for discussion and planning of future activities, the organizers discarded the option of a purely virtual meeting in 2020 and 2021. The EC21 was held as a hybrid event, with a small number of presentations delivered remotely. In order to give a good coverage of the work of the past four years, the EC21 programme was extended to five instead of the traditional four days. The workshop was attended by 117 participants (28 remote) from 15 countries and organizations. There were 15 invited, 39 oral and 36 poster presentations. The present proceedings collect a total of 42 papers.

The programme was organized around the traditional four main topics represented by EC theory, EC experiments, EC diagnostics and EC-related technology. Considerable progress was achieved not only in preparation of ITER (e.g. in the physics and control software, and in the development of gyrotrons and loads), but also in the design and modelling of two machines to be built in Europe in the next years, namely DTT and STEP, which will heavily rely on EC waves. Impressive reports were delivered about the refinement of the diagnostic capabilities related to EC emission, e.g. for turbulence detection and characterization. In general, a remarkable development that can be noted over the past years is the fact that theoretical and experimental activities become increasingly intertwined. We hope that these proceedings provide a representative snapshot of the status of the progress of the EC community in the last four years. We acknowledge the help of many colleagues (both among the participants and beyond) who accepted to review the papers published here.

We would like to thank the local organizing committee for the flawless management of both the meeting and the supporting programme. Taking a look into the ITER tokamak pit from the port that will house the EC equatorial launcher was a haunting and highly motivating experience for many colleagues. We look forward to the next meeting (EC22), which will take place in Korea in spring 2024.

The members of the Local Organizing Committee were  
Yong Liu (scientific coordinator)

Victor Udintsev (scientific coordinator)  
Julie Juif (conference secretary, registration)

The members of the International Programme Committee were

Max Austin (IFS University of Texas at Austin, USA)  
Young-Soon Bae (NFRI, Korea)  
Gregory Denisov (IAP Nizhny Novgorod, Russia)  
Daniela Farina (CNR Milano, Italy)  
Franco Gandini (ITER Organization)  
Mei Huang (SWIP, China)  
Shin Kubo (NIFS, Japan)  
John Lohr (GA San Diego, USA)  
Burkhard Plaum (IGVP University of Stuttgart, Germany)  
Emanuele Poli (IPP Germany, chair)  
Braj K. Shukla (IPR, India)  
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