

## **W.A.T.E.R. Summer School – 6<sup>th</sup> edition**

**Lisbon, July 18th -22nd, 2022**

The FUNDEC and Instituto Superior Técnico of University of Lisboa (Portugal), hosted the 6<sup>th</sup> edition of the W.A.T.E.R. Summer School, co-organized with the Vrije Universiteit Brussel (Belgium). W.A.T.E.R. Summer School is aimed at training postgraduate students (doctoral students), researchers, and practitioners who already have a certain knowledge and skill level in fluid mechanics but who seek advanced training in state-of-the-art measurement techniques.

The Local Organizing Committee led by Prof. Rui Ferreira and Rui Aleixo kept the tradition of providing a rich and high-quality scientific programme. The facilities of the well-equipped Laboratory of Hydraulics of Instituto Superior Técnico were used for the Laboratory sessions of the W.A.T.E.R. Summer School.

In the 6<sup>th</sup> edition of the W.A.T.E.R. Summer School advanced courses on acoustic measurement methods, such as UVP, ADV and ADCP, and optical based techniques, such as PIV, PTV and LDV, were taught. An advance course on photogrammetry and structure from motion and another one on Phase Doppler Anemometry were introduced by the first time in the W.A.T.E.R. Summer School, allowing the participants to enlarge their skills.

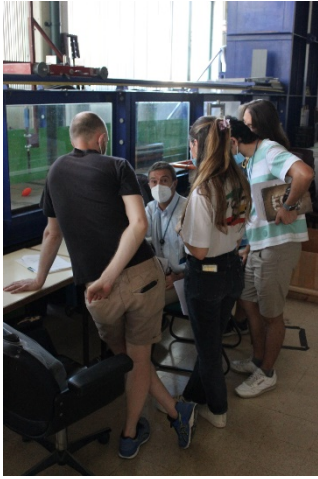
The 6th edition was organized by two members of CERIS: prof. Rui Ferreira (IST) and Rui Aleixo (IST-ID) with the logistical support of FUNDEC and the resources and experimental installations made available by the Laboratory of Hydraulics of the IST.

Twenty participants, coming from different universities representing 9 countries, gather at IST to learn about measurement techniques with an international body of lecturers: Ana Margarida Ricardo (IST-ID, Portugal), Prof. Elsa Carvalho (FEUP, Portugal), Marie Burckbuchler (Ubertone, France), Prof. Margaret Chen (Vrije Universiteit Brussel, Belgium), Prof. Massimo Guerrero (University of Bologna, Italy), Prof. Maurizio Righetti (Free University of Bozen-Bolzano, Italy), Prof. Rui Ferreira (University of Lisboa, Portugal), and Rui Aleixo (IST-ID, Portugal).

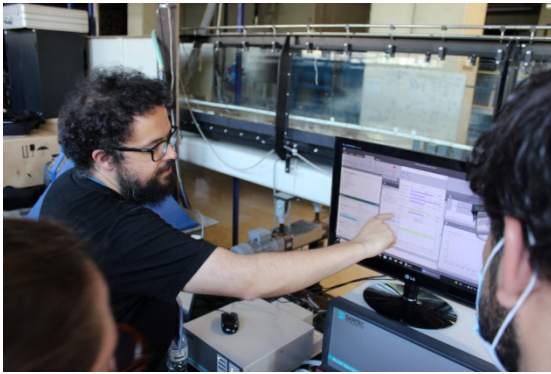
The scientific programme was complemented with a technical visit to LNEC, National Civil Engineering Laboratory in Lisbon. There the students had the opportunity to observe different applications of measurement techniques and the use of large-scale models.

The W.A.T.E.R. Summer School was made possible thanks to UBERTONE for lending the acoustic Doppler instruments and precious technical support given by Marie Burckbuchler, by DANTEC in the person of Christian Tanguy for lending a laser source to the existing Laser Doppler Velocimetry and respective technical support, and by FUNDEC that handled most of the administrative tasks.

The W.A.T.E.R. Summer School was initiated by Prof. Dr Margaret Chen from Vrije Universiteit Brussels (Belgium), in 2016 and it's organised under the auspices of the IAHR technical committee on Experimental Methods and Instrumentation.



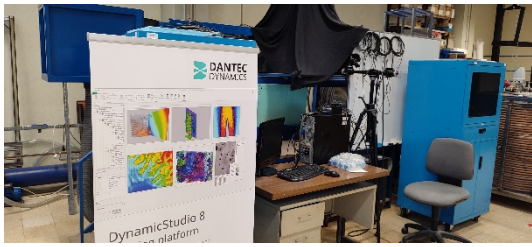
Prof. Maurizio Righetti (Free University bozen-Bolzano) explaining the Phase Doppler Anemometry.



Rui Aleixo (IST-ID) explaining the use of Laser Doppler Velocimetry (Photo courtesy of Katharina Bensing, Technical University of Darmstadt).



Prof. Rui Ferreira (IST - University of Lisboa) performing PTV measurements.



PIV setup.



Marie Burckbuchler and Prof. Massimo Guerrero (University of Bologna) discussing the results.



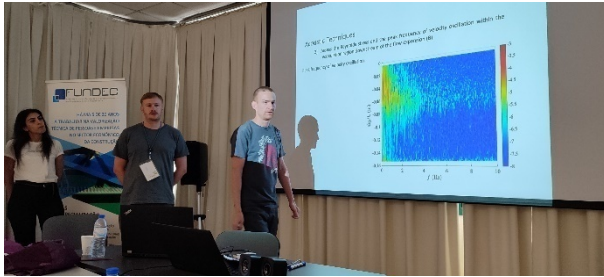
Prof. Elsa Carvalho (Faculty of Engineering of University of Porto).



Technical visit to the Hydraulics Laboratory of LNEC .



Seminar by Prof. Margaret Chen.



Students presenting their results.