Contribution ID: **334**   Type: **Oral Presentation**

Advances in Medical Imaging Instrumentation

Friday, June 13, 2025 8:35 AM (40 minutes)

Advances in medical imaging instrumentation have lead to significant improvements in the accuracy and sensitivity of the scanners and a reduction of the dose administered to the patients. This trend continues to be pursued by current research in the field, aligned with the advances in biology and medicine. In addition, the new technologies in diagnostic imaging that are being developed at the Institute of Instrumentation for Molecular Imaging (I3M) tend to democratize the use of medical imaging and therapy so that they can be extended to the entire world population, in line with the objectives of the World Health Organization.

Low-field magnetic resonance imaging (MRI), together with post-processing methods based on non-generative Artificial Intelligence (AI), is making it possible to obtain quality images of the human body using portable equipment with permanent magnets. Such scanners can be used for the diagnosis and screening of numerous diseases at a significantly lower cost than conventional high-field equipment.

Whole-body positron emission tomography (PET) needs to reduce its costs substantially to be used universally. However, its applications are very numerous and relevant in oncology, to predict the efficacy of treatments such as immunotherapy.

New X-ray techniques whose principle consists of measuring the small diffraction that X-rays undergo as they pass through the body (and not the absorption currently used in commercial equipment) make it possible to diagnose, for example, certain lung diseases that are not detected by conventional methods.

Finally, we have demonstrated the efficacy of photo-acoustics in the detection and follow-up of skin cancer.

Primary author: BENLLOCH, José María (Spanish National Research Council (CSIC), Spain)

Presenter: BENLLOCH, José María (Spanish National Research Council (CSIC), Spain)

Session Classification: Plenary session