15th Workshop on Breakdown Science and High Gradient Technology (HG2023)



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Commissioning of X-band RF test stand facility at the University of Melbourne (X-LAB)

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The Compact Linear Collider (CLIC) beam-based acceleration baseline uses high-gradient traveling wave accelerating structures at a frequency of 12 GHz. To demonstrate the performance of these structures at high peak power and short pulse width RF, two klystron-based test facilities will be put into operation this year.

The X-band Laboratory for Accelerators and Beams (X-LAB) at the University of Melbourne will operate half of the CERN X-band test stand system, known as XBOX3. XBOX3 employs a novel approach that combines relatively low peak power (6 MW) but high average power klystron units. The power is steered to feed two testing slots with RF, delivering the required power at a repetition rate of up to 400 Hz. Additionally, the repetition rate, peak power, pulse length, and pulse shape can be customized to meet specific test requirements.

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