

Development of X-band High Power High Efficiency Klystron

Wednesday, 21 April 2021 12:30 (30 minutes)

50MW X-band High Efficiency Klystron has been developed in CERN for CLIC Klystron driven scheme, as essential upgrade of its commercial counterpart. In this presentation, both the home-made simulation tool and specific design procedure will be elaborated. By taking the advantage of the updated coupling-cell module and optimization module implemented in KlyC, the retrofit Klystron could deliver 50MW power with efficiency of 67% and circuit length of 316mm. The original beam optics system could be reused with the revamped collect design, which is confirmed by home-made 2D code CGUN. Instabilities issues brought by multi-cell 2nd harmonic cavity are also well addressed and solved with comprehensive theoretical and numerical analysis. The prototype is now considered to be built with the collaboration of CERN's industry partners.

Presenter: CAI, Jinchi (CERN)

Session Classification: Session 7