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Ultrafast and nonlinear behaviours in III-V compound semiconductor devices

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InP or InP-based semiconductor devices have been reported showing the highest amplification frequency, such as high electron mobility transistors (HEMTs) and oscillation frequencies like resonant tunnelling diodes (RTDs). What are the limits of these devices and what can we do instead of continuously increasing their operating frequencies? In this talk, I will discuss recent developments in these fields and reveal opportunities. The University of Glasgow has long been known for developing compound semiconductor transistors, including GaAs, InP, GaN, diamond, Ga_2O_3, and Terahertz oscillators, including Gunn diodes and resonant tunnelling diodes, and holds many world records.