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Title:Localized and collective magnetoplasmon excitations in AlGaN/GaN-based grating-gate terahertz modulators

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Abstract:Magnetotransport and magnetooptics investigations of plasmon excitations in large-area grating-gate terahertz modulators based on AlGaN/GaN high-electron-mobility transistors with different grating-gate duty cycle are reported. We demonstrate that the effect of the gate potential on the ungated region extends beyond the conventional fringing effect distance, ranging over 250-350 nm instead of expected 26-30 nm. This phenomenon enables excitation of the localized gated magnetoplasmon modes only if the inter-finger spacing in the grating gate exceeds 350 nm. For narrower slits, only the collective gated magnetoplasmon modes extending over the entire period of the structure can be excited.

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