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**Suppression of interference in quantum Hall Mach-Zehnder geometry by upstream neutral modes** YUVAL GEFEN, The Weizmann Institute of Science, Israel, MOSHE GOLDSTEIN, Tel Aviv University, Israel — Mach-Zehnder interferometry has been suggested as a probe for anyonic quasiparticles in fractional quantum Hall states. However, all experimental attempts to measure such an interference signal have failed to date, despite the high visibility of interference fringes in the integer quantum Hall case. In our work we have studied the relation between this null result and another recent surprising experimental finding, namely the detection of upstream neutral modes in virtually all fractional quantum Hall states (including, e.g., filling  $1/3$ ), not only in hole-like filling factors (such as  $2/3$ ). We have found that the excitation of upstream modes makes the interference visibility in the Mach-Zehnder geometry decay exponentially with the total length of the interferometer arms, even when the lengths are exactly equal. We also suggest ways to overcome this suppression.

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