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**Collective mode dispersions of fractional quantum Hall states**

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The rich correlation physics in two-dimensional electron systems is governed by the dispersion of its excitations. In the fractional quantum Hall regime, excitations involve fractionally charged quasi particles and the collective modes exhibit dispersion minima at large momenta referred to as rotons. These rotons are difficult to access with conventional techniques because of the lack of penetration depth or sample volume. Our method overcomes the limitations of conventional methods and traces the dispersion of excitations across momentum space for buried systems involving small material volume. We used surface acoustic waves, launched across the 2D system, to allow incident radiation to trigger these excitations at large momenta. Optics probed their resonant absorption. Our technique unveils the full dispersion of such excitations of several prominent fractional quantum Hall ground states of the 2D electron system, which has so far been inaccessible for experimentation [1]. This work has been carried out in collaboration with I. V. Kukushkin, V. W. Scarola, V. Umansky, K. von Klitzing.

[1] I. V. Kukushkin, J. H. Smet, V. W. Scarola, V. Umansky, K. von Klitzing, Science 324, 1044 (2009).