Abstract Submitted
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**Tunneling spectra for electrons in the lowest Landau level** F.J. BURNELL, STEVEN H. SIMON, Oxford University — The recently developed experimental technique of time dependent capacitance spectroscopy [1] allows for measurements of high-resolution tunneling spectra of 2DEGs in the quantum Hall regime, giving a detailed probe of the single particle spectral function (electron addition and subtraction spectra). These experiments show a number of interesting features including Landau level structure, exchange enhanced Zeeman energy, Coulomb gap physics, effects of fractional quantization, as well as several key features that remain to be explained. While there has been some prior theoretical work[2] towards explaining low energy Coulomb gap features of tunneling spectra found in much earlier tunneling experiments [3], the new experiments[1] have uncovered physics outside of the prior theoretical explanations. Building on a number of these prior theoretical works, we investigate theoretically the expected tunneling spectra for electrons in low Landau levels, including the effects of electron spin and coupling to collective modes. [1] O. E. Dial, R.C. Ashoori, L.N. Pfeiffer, and K.W. West, Nature 448, 176-179 (2007) ; O. E. Dial et al, unpublished. [2] I. Aleiner et al, Phys. Rev. Lett 74 3435; (1994) S. R. E. Yang and A. MacDonald PRL 70 4110 (1993); S. He, P.M. Platzman, and B. I. Halperin, PRL 71 777 (1993). [3] J. P. Eisenstein et al, Phy. Rev. Lett. 69, 3804 (1992).

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