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Surface acoustic waves as a probe of the Wigner crystal in n-GaAs/AlGaAs in vicinity of $^{\circ}\nu = 1/5$, 1, and 2[1] A.V. SUSLOV, NHMFL, Tallahassee, FL 32310, USA, I.L. DRICHKO, I.YU. SMIRNOV, A. F. Ioffe PTI of RAS, 194021 St.-Petersburg, Russia, L.N. PFEIFFER, K.W. WEST, Princeton University, Princeton, NJ 08544, USA, Y.M. GALPERIN, University of Oslo, 0316 Oslo, Norway — Both attenuation of a surface acoustic wave (SAW) and variation of its speed due to interaction with 2D electrons in n-GaAlAs/GaAs/GaAlAs structures are measured versus perpendicular magnetic field of up to 18 T in the frequency range of (28.5 – 306) MHz and at temperatures (40 – 380) mK. The study is performed on δ-doped from both sides 65 nm wide GaAs quantum well with the carrier density of $n = 5 \cdot 10^{10}$ cm^{-2} and their mobility of $\mu = 8 \cdot 10^{6}$ cm^2/Vs. The complex AC conductance, σ is calculated. Analysis of σ shows that at low temperatures and at the filling factor of 2, 1, and 1/5 the electron system resides in the integer and fractional quantum Hall states, respectively. However, in vicinities to these values, namely at $\nu = 1.9$, (1.1 and 0.9), (0.21 and 0.19), the electron states can be interpreted as so-called pinning modes of Wigner crystal (WC). Temperature dependences of σ indicates a crossover between the localized modes (at $\nu = 1$ and 2) and a pinned WC. When the temperature (or the SAW intensity) increases the behavior of the complex conductance can be understood as manifestation of WC melting.

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A.V. Suslov
NHMFL, Tallahassee, FL 32310, USA

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