

Supplementary Material to the article
“On the fundamental difference between the effects of electrical and mechanical vibrations on charge-density wave dynamics”

1. The linearity of the strain amplitude on V_{act}

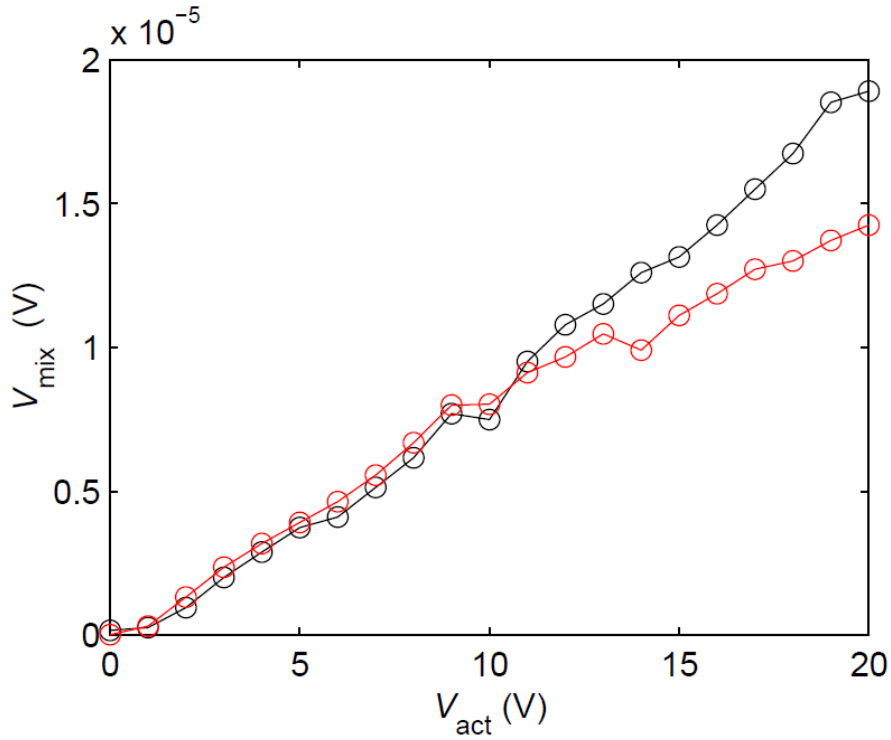


Fig. S1. V_{act} dependencies of mixing voltage, V_{mix} , at two resonance frequencies: 810 kHz (black curve) and 1.18 MHz (red curve). Heterodyne mixing technique [26,27] is applied, V_{mix} is proportional to the amplitude of sample strain. $T=119.6$ K. The effects of the 1.18 MHz resonance on the $R_d(V_{\text{dc}})$ curve have been studied (Figs. S5-S7 below)

2. The effects of electrical and mechanical vibrations at 997 kHz

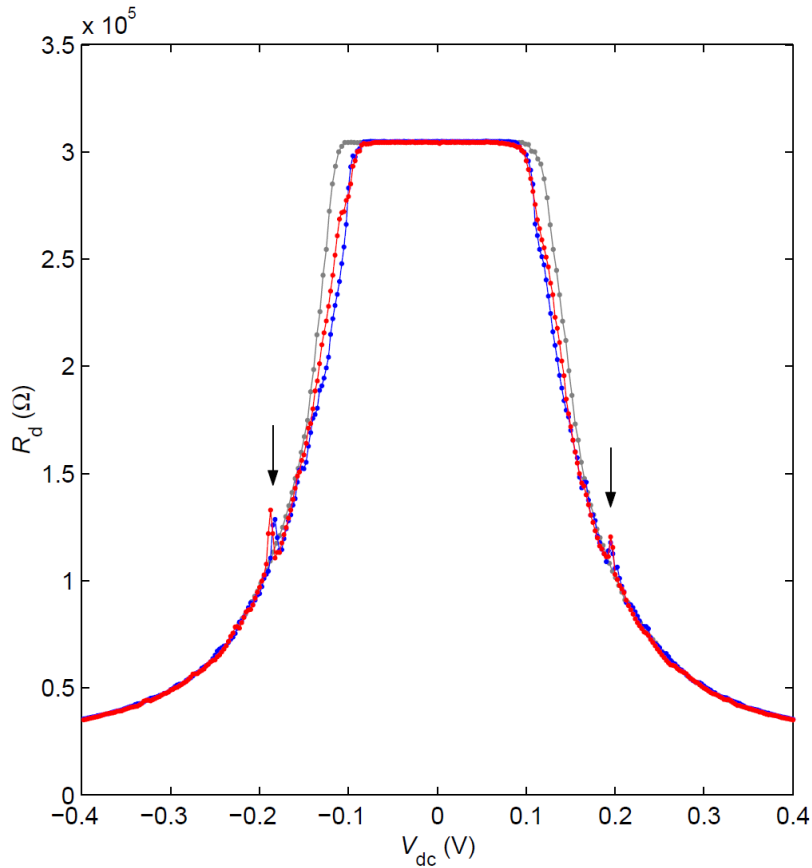


Fig. S2. $R_d(V_{dc})$ curves without rf impacts (grey), under $V_{rf} = 180$ mV (blue) and under $V_{act} = 20$ V (red). $f = 997$ kHz, $T = 120$ K. The arrows point the Shapiro steps.

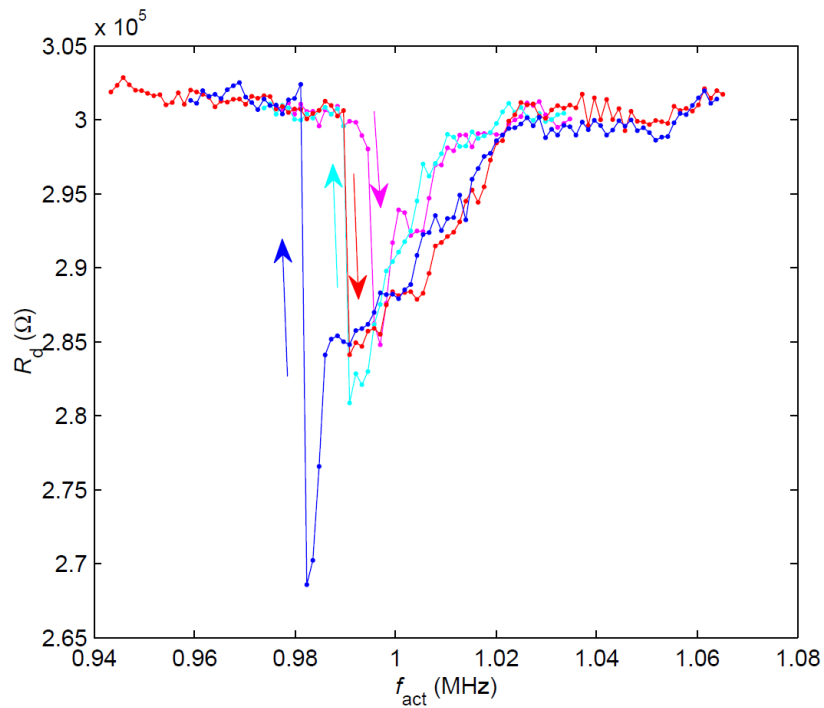


Fig. S3. Frequency dependences of R_d at $V_{dc} = 105$ mV with $V_{act} = 20$ V (red and blue) and $V_{act} = 10$ V (magenta and cyan) measured at two scanning directions of f_{act} . Blue (cyan) symbols correspond to a decrease in f_{act} , red (magenta) - to an increase in f_{act} . $T = 120$ K.

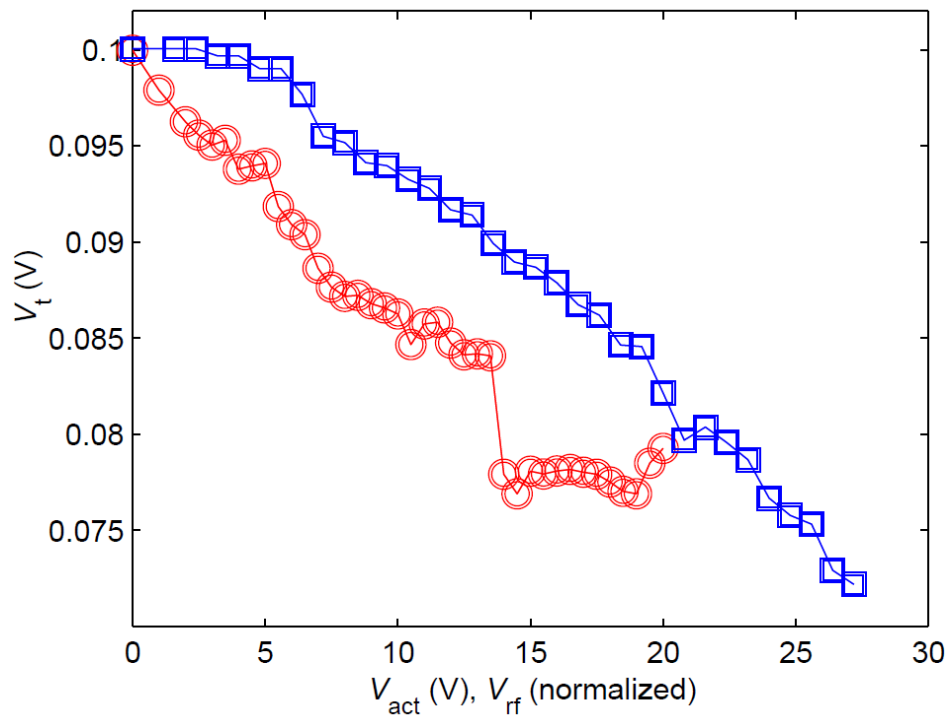


Fig. S4. Dependences of the threshold voltage on V_{act} (red curve) and on V_{rf} (blue curve). V_{rf} is normalized, so that $V_{\text{act}} = 20$ V matches $V_{\text{rf}} = 125$ mV. $f = 997$ kHz. $T = 120$ K.

3. The effects of electrical and mechanical vibrations at 1.22 MHz

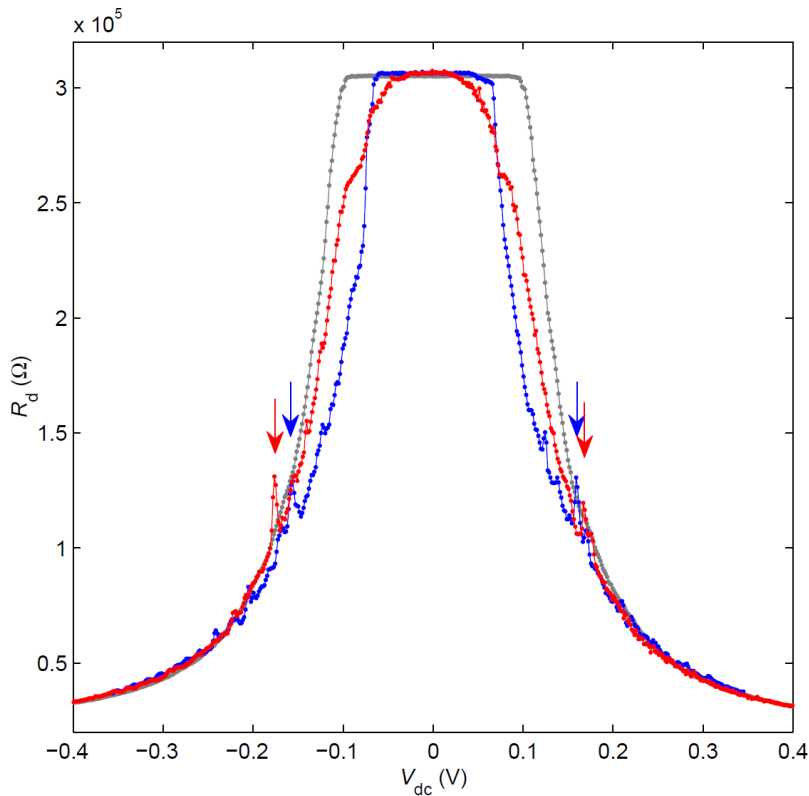


Fig. S5. $R_d(V_{dc})$ curves without rf impacts (grey), under $V_{rf} = 260$ mV (blue) and under $V_{act} = 20$ V (red). $f = 1.22$ MHz, $T = 119.6$ K. The arrows point the Shapiro steps.

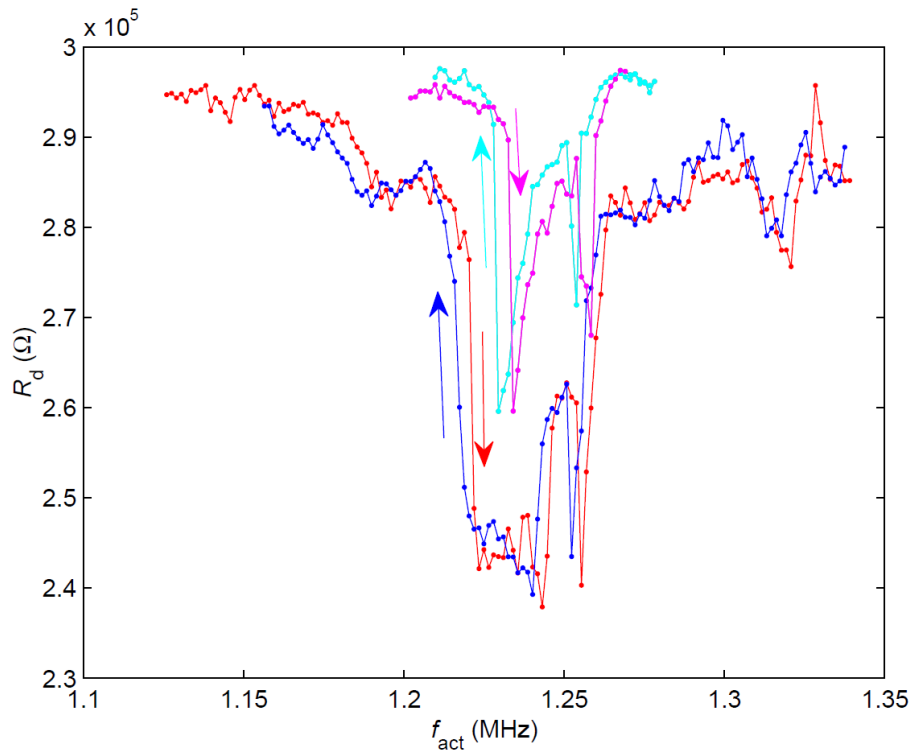


Fig. S6. Frequency dependences of R_d at $V_{dc} = 105$ mV with $V_{act} = 20$ V (red and blue) and $V_{act} = 5$ V (magenta and cyan) measured at two scanning directions of f_{act} . Blue (cyan) symbols correspond to a decrease in f_{act} , red (magenta) - to an increase in f_{act} . $T = 119.6$ K. A slight downward shift of the curves with $V_{act} = 20$ V must be attributed to heating of actuators.

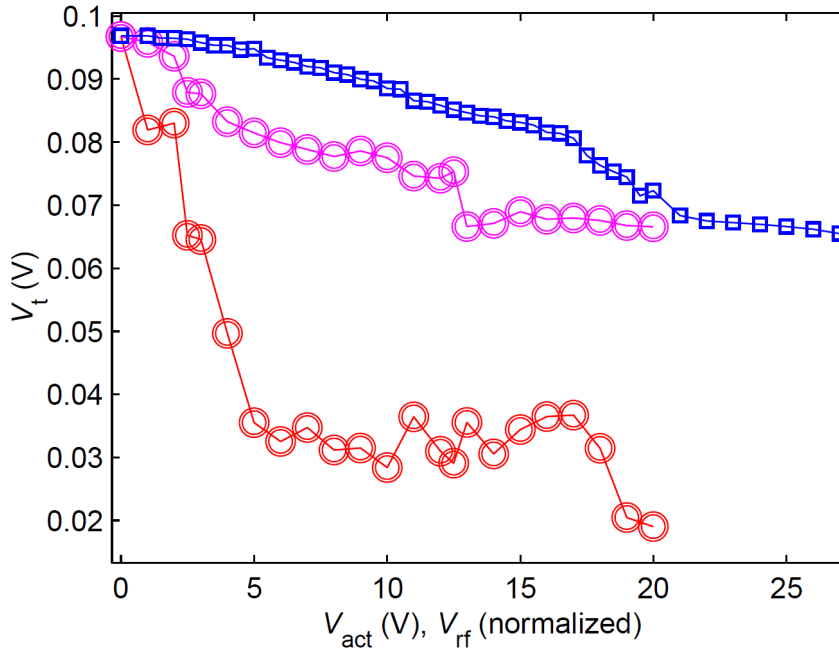


Fig. S7. Dependences of the threshold voltage on V_{act} (red and magenta curves) and on V_{rf} (blue curve). Because the threshold is doubled under V_{act} (Fig. S5), V_t is determined in two ways: linearly extrapolating the drop of $R_d(V_{dc})$ in Fig. S5 up to the value of $R_d(0)$ (magenta circles), and as the voltage of notable decrease of R_d below the level of $R_d(0)$ (red circles). V_{rf} is normalized, so that $V_{act} = 20$ V matches $V_{rf} = 200$ mV. $f = 1.22$ MHz. $T = 119.6$ K.