

## A SPICE-Compatible Model of Graphene Nano-Ribbon Field-Effect Transistors

 Goal: Develop a parameterized SPICE model of GNRFETs to enable efficient circuit-level simulations, especially for circuits under

process variations.  $\mathbf{Q}_{\mathsf{CAP}}(\mathbf{\Psi}_{\mathsf{CH}})$ Via V<sub>DD</sub> Metal  $C_{SUB,CH}$  $\mathbf{V}_{\mathsf{CH}}$ Graphene EDP (W·s·s) Delay (ns) 250.00 1E-25 200.00 1E-26 150.00 1E-27 100.00 1E+02 1E-28 50.00 1E+01 0.00 c17 b02 s27 cla c17 b02 s27 cla 1E+00 ■I num 0.1 I<sub>dS</sub>(uA) 1E-01 Dynamic Power (W) Leakage Power (W) • I num 0.5 1E-02 1E-5 1E-5 ▲I num 0.8 -I ana 0.1 1E-03 1E-6 1E-6 -I ana 0.5 1E-04 1E-7 -I ana 0.8 1E-05 1F-8 0.2 0.6 0.4 0.8 c17 c17 b02 s27 b02  $V_{GS}(V)$ Ying-Yu Chen, Artem Rogachev, Amit Sangai, Deming Chen