Title:	First-order density-wave-like transitions in surface-doped Na 2 IrO 3
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Abstract:	We demonstrate that the surface of the honeycomb lattice iridate Na 2 IrO 3 is extremely tunable by plasma etching. We have succeeded in turning the surface of Na 2 IrO 3 metallic by argon plasma etching which leads to the removal of Na from the surface. The surface structure does not change in this process as revealed by grazing incidence small-angle x-ray scattering. The sheet resistance R s can be reduced by several orders of magnitude by varying the etching duration. Temperature-dependent R s (T) for the metallic samples shows signatures of spin- or charge-density-wave transitions with abrupt changes in R s . Thermal hysteresis between cooling and warming measurements across the transition indicates a first-order transition. For the most metallic sample R s (T) data at low temperatures follow a T 2 behavior suggesting normal Fermi-liquid behavior.
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