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**Induced superconductivity in high mobility two dimensional electron gas in GaAs heterostructures**

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Search for Majorana fermions renewed interest in semiconductor-superconductor interfaces, while a quest for higher order non-Abelian excitations demands formation of superconducting contacts to materials with fractionalized excitations, e.g. a two-dimensional electron gas in a fractional quantum Hall regime. Here we report induced superconductivity in high mobility two-dimensional electron gas in GaAs heterostructures and development of highly transparent semiconductor-superconductor ohmic contacts. Supercurrent with characteristic temperature dependence of a ballistic junction has been observed across  $0.6 \mu\text{m}$ , a regime previously achieved only in point contacts but essential to the formation of well separated non-Abelian states. High critical fields ( $> 16$  Tesla) in NbN contacts enables investigation of an interplay between superconductivity and strongly correlated states in a two dimensional electron gas at high magnetic fields.