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Gate-voltage induced trions in suspended carbon nanotubes<sup>1</sup> MASAHIRO YOSHIDA, ALEXANDER POPERT, YUICHIRO K. KATO, The University of Tokyo — We observe trion emission from suspended carbon nanotubes where carriers are introduced electrostatically using field-effect transistor structures [1]. The trion peak emerges below the  $E_{11}$  emission energy at gate voltages that coincide with the onset of bright exciton quenching. By investigating nanotubes with various chiralities, we verify that the energy separation between the bright exciton peak and the trion peak becomes smaller for larger diameter tubes. Trion bind-ing energies that are significantly larger compared to surfactant-wrapped carbon nanotubes are obtained, and the difference is attributed to the reduced dielectric screening in suspended tubes.

[1] M. Yoshida, A. Popert, and Y. K. Kato, arXiv:1510.08996.

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