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Department of
Theoretical Physics

Tata-Infosys
Lecture Series

D-instanton Perturbation Theory

Ashoke Sen
(HRI, Allahabad)

Date / Time / Venue

(I) 24 February 2020, 11:30 AM,
A-304

(II) 27 February 2020, 11:00 AM,
AG-66

(III) 28 February 2020, 10:00 AM,
A-304

D-instanton world-volume theory has open string zero modes describing collective coordinates of the instanton. The usual perturbative amplitudes in the D-instanton background suffer from infra-red divergences due to the presence of these zero modes, and the usual approach of analytic continuation in momenta does not work since all open string states on a D-instanton carry strictly zero momentum. String field theory is well-suited for tackling these issues. However there is a new subtlety due to the existence of additional zero modes in the ghost sector. This causes a breakdown of the Siegel gauge, but a different gauge fixing consistent with the BV formalism renders the perturbation theory finite and unambiguous. At each order, this produces extra contribution to the amplitude besides what is obtained from integration over the moduli space of Riemann surfaces.