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4D effective action from non-Abelian DBI action with magnetic flux background

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We derive 4D $\mathcal{N} = 1$ supersymmetric effective theory from 10D non-Abelian Dirac-Born-Infeld action compactified on a six dimensional tori with magnetic flux on the D-branes.
For the 10D action, we use a symmetrized trace prescription and focus on the bosonic part.
4D chiral fermions can arise via index theorem for the background flux.
The gauge coupling and the matter K\"{a}hler metric are read from the 10D action, which depend on closed string moduli and the fluxes.
We read the superpotential from an F-term scalar quartic interaction derived from the 10D action, and discuss the contribution of the matter K\"{a}hler metric to the scalar potential is consistent with the supergravity formulation.
This talk is based on the collaboration with Tetsutaro Higaki, Tatsuo Kobayashi, Shintaro Takada and Rei Takahashi.

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