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Thermal DBI at weak and strong coupling

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We propose a new way to describe the dynamics of Dp-branes probing finite temperature backgrounds at weak coupling (gs « 1) using a thermally corrected version of the DBI action. The new thermal DBI action can be derived perturbatively for small temperature through a quantum computation and the leading correction in temperature is given by the one-loop effective action for the DBI. For the specific case of D3-branes we also compare the thermal DBI action at weak coupling with the corresponding one at strong coupling, which can be obtained using the blackfold approach. Remarkably we find that the famous 3/4 factor between strongly and weakly coupled regimes for the D3-brane without electric and magnetic fields actually extends to the full non-linear DBI regime.

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