

# Power corrections to the HTL effective Lagrangian of QED

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We present compact expressions for the power corrections to the hard thermal loop (HTL) Lagrangian of QED in  $d$  space dimensions. These are corrections of order  $(L/T)^2$ , valid for momenta  $L \ll T$ , where  $T$  is the temperature. In the limit  $d \rightarrow 3$  we achieve a consistent regularization of both infrared and ultraviolet divergences, which respects the gauge symmetry of the theory. We also discuss how to generalise our results in the presence of a chemical potential, so as to obtain the power corrections to the hard dense loop (HDL) Lagrangian.

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