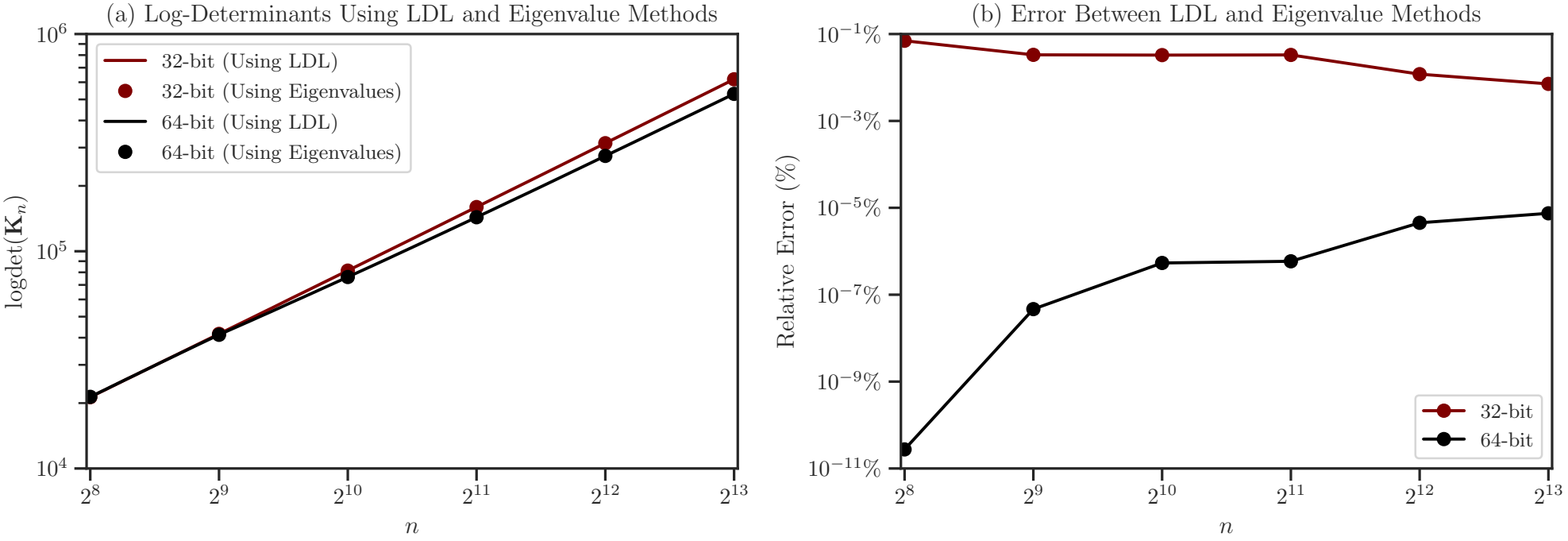

Figure J.2 Comparison of log-determinant estimates using LDL decomposition and eigenvalue-based computation. We consider NTK matrices from ResNet9 trained on CIFAR-10, with output dimension $d = 10$. For discrete submatrix sizes $n_s = 2^8, 2^9, \ldots, 2^{13}$, we compute log-determinants of sampled NTK submatrices $\mathbf{K}_{n_s} \in \mathbb{R}^{(n_s d)\times(n_s d)}$ using eigenvalue decomposition (circle markers). In parallel, we compute the log-determinant of all submatrices $\mathbf{K}_n$ for $n = 1, \ldots, 50{,}000$ using MEMDET (LDL decomposition on 32 blocks), shown as continuous curves. Panel (a) shows results for both 32-bit and 64-bit NTK matrices. The close overlap of solid curves and circle markers within each precision category confirms the numerical equivalence of LDL and eigenvalue methods. Panel (b) quantifies their relative error. For 32-bit NTK, the error remains between $10^{-3}\%$ and $10^{-1}\%$; for 64-bit NTK, it drops to between $10^{-11}\%$ and $10^{-5}\%$. These results disprove the claim that LDL decomposition is unstable or inaccurate—both methods yield consistent estimates, with differences arising only from upstream NTK precision, not from MEMDET itself.