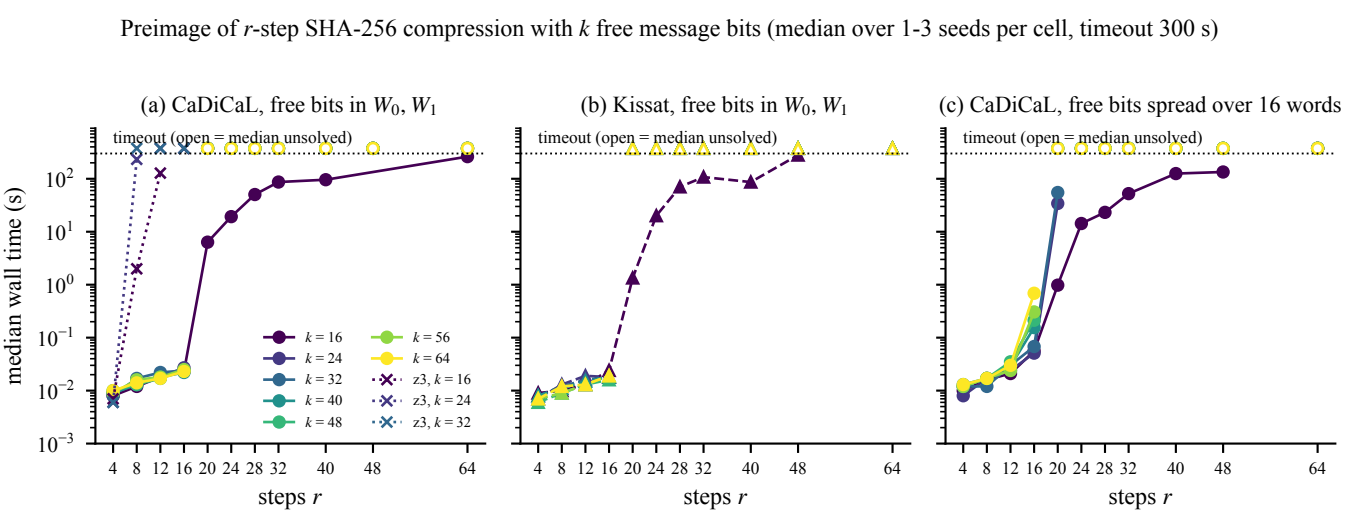

Preimage of r-step SHA-256 compression with k free message bits (median over 1-3 seeds per cell, timeout 300 s)
(a) CaDiCaL, free bits in W_0, W_1
(b) Kissat, free bits in W_0, W_1
(c) CaDiCaL, free bits spread over 16 words
timeout (open = median unsolved)
median wall time (s)
steps r
k = 16
k = 24
k = 32
k = 40
k = 48
k = 56
k = 64
z3, k = 16
z3, k = 24
z3, k = 32