

SignSGD no noise  $(10, n^{-1.1})$ -DP-SignSGD momentum 0.9 lr =  $\frac{1}{10\sqrt{d}T^{1/5}}$  Lévy  $(10, n^{-1.1})$ -DP-SignSGD no noise dyn lr =  $\frac{1}{10\sqrt{d}T^{1/5}}$  Lévy  $(10, n^{-1.1})$ -DP-SignSGD momentum 0.6 lr =  $\frac{1}{10\sqrt{d}T^{1/5}}$  Lévy