Conjecture 4.21 *Let $A_1, \ldots, A_n \in \mathbb{R}^{d \times d}$ be symmetric matrices and $g_1, \ldots, g_n \sim \mathcal{N}(0,1)$ i.i.d., then:*

$$\mathbb{E} \left\| \sum_{k=1}^{n} g_k A_k \right\| \lesssim \sigma + (\log d)^{\frac{1}{2}} \sigma_*,$$

While it may very will be that this Conjecture 4.21 is false, no counter example is known, up to date.

Open Problem 4.1 (Improvement on Non-Commutative Khintchine Inequality) *Prove or disprove Conjecture 4.21.*

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