$\lg \left[\operatorname{tr}\left(\mathbf{w}^{\dagger} \mathbf{w}\right)\right]$


$$
\sigma_{d} \text { large }
$$

$$
\lg \left[\operatorname{tr}\left(\mathbf{w}^{\dagger}\left(\mathbf{M}+\sigma_{d}^{2} \mathbf{I}\right) \mathbf{w}\right)\right]
$$

