

$$D = 3 + \ell: \quad \ell < k$$

$$A_k^\ell = GL_{k-\ell}(\mathbb{R})$$

scalar coset $GL_{k-\ell}(\mathbb{R}) / O_{k-\ell}$

pure gra $\mathfrak{R}_{k+3} / \mathbb{T}^\ell$