



Figure 1: Illustration of Riemannian optimization on \mathbb{T}_2 (a torus embedded in \mathbb{R}^3): the iterate \mathbf{w}_{t+1} is obtained from the retraction $\mathcal{R}_{\mathbf{w}_t}$ applied to the direction descent $\xi_t \in T_{\mathbf{w}_t} \mathbb{T}_2$ (a vector of the tangent space of \mathbb{T}_2 at point \mathbf{w}_t).