

**RIEMANNIAN STRUCTURES
ON HIGHER ORDER FRAME BUNDLES
FROM CLASSICAL LINEAR CONNECTIONS**

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Abstract: We describe all $\mathcal{M}f_m$ -natural operators $A : Q \rightsquigarrow \mathit{Riem}P^r$ transforming classical linear connections ∇ on m -dimensional manifolds M into Riemannian structures $A(\nabla)$ on the r -th order frame bundle $P^r M = \mathit{inv}J_0^r(\mathbf{R}^m, M)$ over M .

Key words: Classical linear connection, Riemannian structure, higher order frame bundle, natural operator

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