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Homogeneous elliptic equations as geodesic equation of infinite dimensional geometric structures.

We summarize several homogeneous fully nonlinear elliptic equations, including homogeneous complex Monge-Ampere, the Donaldson equation and the Gursky-Streets equations. All these equations arise as the geodesic equation of certain infinite dimensional geometric structures.

We will give a brief summary of these geometric structures, the regularity of the equations of their applications. (Received January 27, 2019)