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CONFORMAL-PROJECTIVE STRUCTURES ON STATISTICAL MANIFOLDS AND CUBIC FORM GEOMETRY

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In this talk, we discuss conformal-projective structures on statistical manifolds and cubic form geometry. The notion of conformal-projective structures on statistical manifolds was introduced by the speaker in order to characterize statistical manifolds which are realized into the affine space of codimension two. A conformal-projective structure on a statistical manifold is a generalization of conformal structures of Riemannian geometry or alpha-conformal structures on statistical manifolds. This conformal-projective structure has been studied by the speaker or Kurose in affine differential geometry. On the other hand, a cubic form (or a difference tensor field) is a basic quantity of statistical manifold, which characterizes the duality of statistical manifolds. The geometry of cubic forms is also studied in affine differential geometry since cubic forms characterize hyperquadratics in affine spaces. In this talk, we show that the traceless part of cubic form on a statistical manifold determines a conformal-projective structure on the statistical manifold. Moreover, we discuss applications of conformal-projective geometry.