CONSTANT CURVATURE CONNECTIONS ON STATISTICAL MODELS

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We discuss statistical manifolds [1] with connections of constant α-curvature. The Pareto two-dimensional statistical model has such a structure that each of its α-connections has a constant curvature $(-2\alpha - 2)$. It is known that if the statistical manifold has an α-connection of constant curvature then it is a conjugate symmetric manifold [2]. The Weibull two-dimensional statistical model has the following structure. Its 1-connection has the constant curvature

$$k^{(1)} = \frac{12\pi^2\gamma - 144\gamma + 72}{\pi^4}$$

where $\gamma = \lim_{n\to\infty}\left(\sum_{k=1}^{\infty} \frac{1}{k} - \log n\right)$ is Euler-Mascheroni constant. We compare this model with some known statistical models like normal and logistic ones [3].

Keywords: Statistical manifold, constant α-curvature, conjugate symmetric manifold, Pareto statistical model, Weibull statistical model.

References

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