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About the densities for straight lines in semi-Riemannian spaces. (English) Zbl 1190.53072
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The author considers some families of all linear r -subspaces of a given n -dimensional space. The aim is to find the densities of such families, which are $(n - r)(r + 1)$ -differential forms.

First, for $n = 3$, the cases $r = 2$ and $r = 1$ are considered, and the corresponding densities are computed in the Euclidean space.

For $n = 2$ and $r = 1$ the density is determined in the case of a semi-Riemannian space. From this, new formulas can be derived for the particular cases of Euclidean and Lorentzian plane.

Further, the density for the family of lines which are tangent to a differentiable curve in the Euclidean plane is obtained as a function of the curvature of the curve.

Also, the family of planes which are tangent to a differential surface is considered, and its density is computed in terms of the Hessian of the surface itself

Reviewer: [Paolo Dulio \(Milano\)](#)

MSC:

[53C65](#) Integral geometry

Keywords:

[curvature](#); [density](#); [Hessian](#); [semi-Riemannian space](#)