CURVATURE OF GEODESICS AND A
CHARACTERIZATION OF DE SITTER SPACES

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We denote by $M^n$ a geodesically connected Lorentzian hypersurface in the $(n + 1)$-dimensional Minkowski space $\mathbb{L}^{n+1}$. Suppose that every unit speed geodesic $X(s)$ on $M^n$ satisfies $\langle X''(s), X''(s) \rangle \geq 1/r^2$ and there exists a point $p \in M^n$ such that for every unit speed geodesic $X(s)$ of $M^n$ through the point $p$, $\langle X''(s), X''(s) \rangle = 1/r^2$ holds. Then, we show that up to isometries of $\mathbb{L}^{n+1}$, $M^n$ is an open part of the de Sitter space $\mathbb{S}^n_1(r)$. Hence if $M^n$ is complete, then $M^n$ is the de Sitter space $\mathbb{S}^n_1(r)$.