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On a theorem of Fermi

Comment.Math.Univ.Carolinae 37,4 (1996) 867-872.

Abstract: Conformally flat metric $\bar{g}$ is said to be Ricci superosculating with g at the point x_0 if $g_{ij}(x_0) = \bar{g}_{ij}(x_0)$, $\Gamma^k_{ij}(x_0) = \bar{\Gamma}^k_{ij}(x_0)$, $R^k_{ij}(x_0) = \bar{R}^k_{ij}(x_0)$, where R_{ij} is the Ricci tensor. In this paper the following theorem is proved:

If γ is a smooth curve of the Riemannian manifold M (without self-crossing), then there is a neighbourhood of γ and a conformally flat metric $\bar{g}$ which is the Ricci superosculating with g along the curve γ.

Keywords: conformal connection, development
AMS Subject Classification: 53A30, 53C20