

Conformally flat hypersurfaces of R^4 with three distinct principal curvatures.

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Resumo/Abstract:

In this talk we present some new results on conformally flat hypersurfaces $f: M^3 \rightarrow Q^4(c)$ with three distinct principal curvatures. After recalling some known results we discuss a characterization of such hypersurfaces, obtained jointly with S. Canevari [1], which improves a previous theorem by Hertrich-Jeromin. Then we discuss how it was applied, in a joint work with C. Gonçalves [2], to study conformally flat hypersurfaces in $Q^4(c)$ with three distinct principal curvatures and constant mean curvature. First we describe an extension of a result due to Defever for the case $c = 0$, which shows that such a hypersurface does not exist if $H \neq 0$. Then, it is shown that if $c \neq 0$ and $f: M^3 \rightarrow Q^4(c)$ is a minimal conformally flat hypersurface with three distinct principal curvatures then $f(M^3)$ is an open subset of a generalized cone over a Clifford torus in an umbilical hypersurface $Q^3(\tilde{c}) \subset Q^4(c)$, $\tilde{c} > 0$, with $\tilde{c} \geq c$ if $c > 0$. For $c = 0$, it is shown that, besides the cone over the Clifford torus in $S^3 \subset R^4$, there exists precisely a one-parameter family of pairwise noncongruent minimal conformally flat hypersurfaces with three distinct principal curvatures.

References

- [1] CANEVARI, S. AND TOJEIRO, R., *Hypersurfaces of two space forms and conformally flat hypersurfaces*, Preprint.
- [2] GONÇALVES, C. AND TOJEIRO, R., *Conformally flat hypersurfaces with constant mean curvature*, Preprint.