

# Hypersurfaces of two space forms and conformally flat hypersurfaces

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**Abstract.** In this talk, we discuss the problem of determining the hypersurfaces  $f : M^n \rightarrow \mathbb{Q}_s^{n+1}(c)$  with dimension  $n \geq 3$  of a pseudo-Riemannian space form of dimension  $n+1$ , constant curvature  $c$  and index  $s \in \{0, 1\}$  for which there exists another isometric immersion  $\tilde{f} : M^n \rightarrow \mathbb{Q}_t^{n+1}(\tilde{c})$  with  $c \neq \tilde{c}$ . For  $n \geq 4$ , we extend results for  $s = 0 = t$  by do Carmo and Dajczer and by Dajczer and the second author, thus providing a complete solution in that case. Our main result is a characterization of the solutions that have dimension  $n = 3$  and three distinct principal curvatures. We obtain a similar characterization of conformally flat hypersurfaces of  $\mathbb{Q}_s^4(c)$  with three distinct principal curvatures, which improves a theorem by Hertrich-Jeromin. We also derive a Ribaucour transformation for both classes of hypersurfaces, which enables to produce new elements of those classes, starting from a given one, in terms of solutions of a linear system of PDE's. The talk is based on joint work (in preparation) with S. Canevari.