

The space of oriented spheres as a bridge between \mathbb{H}^3 and \mathbb{R}^3

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It is well known that minimal surfaces in Euclidean space \mathbb{R}^3 and flat fronts in \mathbb{H}^3 admit a holomorphic representation. They also share in common the fact that there are many interesting global theorems about their geometry and topology.

Despite these similarities, there is no direct geometric link between these two classes of surfaces that are immersed in different ambient spaces. The aim of this talk is to show a geometric construction that associates to a given flat front in \mathbb{H}^3 a pair of minimal surfaces in \mathbb{R}^3 that are related by a Ribaucour transformation. This construction is a particular case of a geometric method to associate surfaces in \mathbb{H}^3 to a pair of surfaces in \mathbb{R}^3 that are the envelopes of a smooth congruence of spheres.

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