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Joel L Weiner* (joel@math.hawaii.edu), Joel L. Weiner, Dept. of Math., University of Hawaii, 2565 The Mall, Honolulu, HI 96822. *Isometric immersions of the Euclidean plane into Euclidean 4-space*. Preliminary report.

We show how to construct smooth mappings of \mathbb{E}^2 into \mathbb{E}^4 so that at each point of the image there is an oriented tangent plane and thus an associated Gauss map of \mathbb{E}^2 into the Grassmannian of oriented 2-planes in \mathbb{E}^4 . This Gauss map turns out to be regular and the 2-plane bundle of tangent planes as well as its orthogonal complement turn out to be flat. Thus when the mapping is regular we obtain an isometric immersion of \mathbb{E}^2 into \mathbb{E}^4 which has first normal space of constant dimension 2 and trivial normal curvature. One may construct isometric immersions $f : \mathbb{E}^2 \rightarrow \mathbb{E}^4$ by composing isometric immersions of the following sort: $h : \mathbb{E}^2 \rightarrow \mathbb{E}^3$ and $g : \mathbb{E}^3 \rightarrow \mathbb{E}^4$. We can easily identify such “trivial” immersions in the class of immersions whose construction is indicated above by means of the Gauss map. (Received January 19, 2001)