Framed surfaces in the Euclidean space

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We introduce a study of smooth surfaces with singular points by using a moving frame. A framed surface is a smooth surface in the Euclidean space with a moving frame. By using the moving frame, we introduce the basic invariants and curvatures. Then we show that the existence and uniqueness for the basic invariants of the framed surfaces. We give properties of framed surfaces and typical examples. Moreover, we construct framed surfaces as one-parameter families of Legendre curves along framed curves. We give a criteria for singularities of framed surfaces by using the curvature of Legendre curves and framed curves.

This is a joint work with Masatomo Takahashi (Muroran Institute of Technology).