

Results of my research

1. **The discovery of the example of algebraic minimal surface with the totally ramified value number of the Gauss map is equal to 2.5**

Many researchers believed that the upper bound of the totally ramified value number (TRVN) of the Gauss map of algebraic minimal surfaces (complete minimal surfaces with finite total curvature) is “2”. However, we discover an algebraic minimal surface with the TRVN of the Gauss map is equal to “2.5”, we find that the above conjecture is false.

2. **The study of value distribution theoretical properties of the Gauss map of pseudo-algebraic minimal surfaces in 3-dimensional Euclidean space**

We introduce the class of pseudo-algebraic minimal surfaces and obtain the best possible estimates for the number of exceptional values and the TRVN of the Gauss map in this class. By these estimates, we can understand the relationship between “pseudo-algebraic” and “algebraic”, and reveal the geometrical meaning behind them. We also obtain a unicity theorem. This is joint work with Profs. Reiko Miyaoka and Ryoichi Kobayashi.

3. **The study of value distribution theoretical properties of the Gauss map of pseudo-algebraic minimal surfaces in higher dimensional Euclidean space**

We prove an analog of the above results for the Gauss map of pseudo-algebraic minimal surfaces in 4-dimensional Euclidean space. Moreover we study Profs. Lu Jin and Min Ru’s results of the generalized Gauss map of pseudo-algebraic minimal surfaces in n -dimensional Euclidean space, give the best possible example for them.

4. **The study of value distribution theoretical properties of the hyperbolic Gauss map of complete CMC-1 surfaces in hyperbolic 3-space**

We obtain the best possible estimate of the TRVN of the hyperbolic Gauss map of complete CMC-1 surfaces in hyperbolic 3-space. Moreover we define the class of algebraic CMC-1 surfaces and obtain the ramification estimate of the hyperbolic Gauss map for this class.

5. **Finite extinction time for the Ricci flow on 3-manifolds**

We study the results on finite extinction time for the Ricci flow on non-aspherical 3-manifolds which are written in the paper of T.H.Colding and W.P.Minicozzi II, write the survey of these results in RIMS Kokyuroku.