Research Result

Toshihiro NOGI

I have studied holomorphic families of Riemann surfaces. Concretely, I have the following results.

1.Evaluation of the number of holomorphic sections

Since Mordell conjecture over function fields was proved by Manin and Grauret, we see every holomorphic family of Riemann surfaces of genus ≥ 2 has only a finite number of non-trivial holomorphic sections. However, we do not see how many sections does a holomorphic family have. And it is important to evaluate the number of these sections. So I consider evaluating the number of a special holomorphic family, by joint works with Professor Yoichi Imayoshi (Osaka city university), we have the following result:

There exist exactly two holomorphic sections of a holomorphic family $(\mathcal{M}, \pi, R)$ *of closed Riemann surfaces of genus two over a fourth punctured torus which is induced by a certain Kodaira surface and is constructed by Riera* ([1], [2]).

This study can be regarded as the first step to the evaluation of the number of holomorphic sections.

2.Classification of degenerated Riemann surfaces

To classify all degenerated Riemann surfaces is a fundamental research in the theory of degenerated Riemann surfaces. Prof Imayoshi and I have a complex analytical classification of four degenerated Riemann surfaces which appear naturally in the above triple $(\mathcal{M}, \pi, R)$ ([1], [2]).