
Shigetoshi Bando (板東重稔)

Dr. Shigetoshi Bando received his Ph.D. from Princeton University in 1983 under the supervision of Shing-Tung Yau. He is currently a professor in Tohoku University. His research interests include complex differential geometry, analytical differential geometry, and especially the existence and uniqueness of Kähler-Einstein metrics.

Days at Princeton

I first met Professor S.-T. Yau in 1981 at Princeton University.

Before coming to Princeton, I was a master course student at Tohoku University in Japan. When I got in the graduate school, Professor T. Kotake who was my advisor told me that if you want to study PDE, then you have to study either Physics or Geometry. Although I was not fond of Geometry in the undergraduate course, but it's still in Mathematics, I chose it. Then Prof. Kotake said that you have to follow the works of Prof. Yau, who is the best. I started to learn Riemannian Geometry to understand Prof. Yau's works.

In the meantime, Professor H. Hironaka launched the study abroad program for the graduate students. Fortunately I was chosen as one of the first members of the program. At that time Prof. Yau was at IAS, Princeton, and I heard a graduate student at Princeton University may have a member at IAS as an advisor, I decided to go to Princeton, without first making contact with Prof. Yau, which was reckless on my part.

At Princeton I attended Prof. Yau's course on the eigenvalue problems. The lecture was very organized and brought us from the first step of defining Laplacian to the cutting edge of open problems in a semester. I was very impressed and re-determined to study under him.

The first time I asked him to be my advisor, he declined as he already had many students. It was my great disappointment.

Since I came to all the way to Princeton, I could not accept it, and asked him again several days after. But his answer was the same.

I was at a loss what to do at Princeton? For the third time, thinking it would be the last chance, I appealed to him. He finally gave up and accepted me as one of his students.

One time, I had got an idea on the deformation invariance of general type and asked him for his time. Although he kindly let me explain the idea, I immediately realized the idea was wrong seeing his look. After that I refrained from seeing him, partially because of the failure and since he was reluctant to accepting me as an advisee.

He gave me some papers to read. One of them was the famous paper by Prof. A. Futaki on the Futaki invariant. I managed to extend the result and submitted a report to Prof. Yau. He let me have a chance to give a talk at IAS, but it turned out Prof. E. Calabi was giving a talk on the extension of Futaki's result a few weeks before mine.

Prof. Yau had organized a seminar to study the works of Prof. R. S. Hamilton on the Ricci flow. It was an exciting result, but it had not occurred to me that it might be useful even in a higher dimension. Prof. H.-D. Cao, who was a fellow student at that time, said that in the Kähler case one might avoid the partial shrinking. It was a great observation and I myself started studying the Kähler case. Of course, it was too heavy problem for a graduate student even under the assumption of positive bisectional curvature. I recalled Prof. H. Urakawa's words: "If a problem is difficult, extend it." I gave up to deform a metric of positive bisectional curvature to the Fubini-Study metric and studied non-negative bisectional curvature case. After tedious calculations I managed to get a result and reported it to Prof. Yau and asked him for the degree. When I explained the result to him without going into the details of the calculations, he pointed out that I had to check the calculation of the particu-

lar statement. I have to confess that I had not taken it seriously since I had gone through many times. But a few days later I became anxious about Prof. Yau's words, and decided to make sure. In my surprise, I found a mistake exactly the place he pointed out. I made the revised version in a haste and re-submitted

it to him. Later, it occurred to me that Prof. Yau should have already known the result, since he had at once pointed out my mistake. It shows his generosity to his students.

After getting the degree I came back to Tohoku. I still remember my exiting days at Princeton.