

## **First Report to the President of INdAM**

The first year of the PhD at my host institute, the department of mathematics and physics, Roma Tre is to follow the courses so as to complete the credits. The rule is to follow four courses, among them one must be outside of the related field. Therefore, mainly I spend my first year in order to complete the requirement of the department. The following are the major activities that I have involved in 2018. In the first semester of 2018, I have attended two courses in the Department of Mathematics and Physics, Roma, Tre. One is group theory (AL440) with Prof. Lucia CAPORASO in which I got 27 points out of 30. Second course was Analytic Number Theory (TN510) with Prof. Francesco Pappalardi in which I got 30/30. Besides the courses in the first semester, I have attended numerous seminar conducted by the department of mathematics and physics held each week. I have also given a seminar entitled "Lattice Based Cryptography" in the PhD seminar on April 6, 2018.

Furthermore, I have participated two research schools during this year as a training program for PhD. First school was Spring school entitled Post-Scriptum on March 18-23, 2018 in Grenoble, France. Basically, the aim of the school is to introduce post quantum cryptography which is a quantum resistance cryptography. Second was a summer school at Nesin Mathematics Village, Turkey where I attended crash course including Algebraic Number Theory, Modular Forms and Quantum Computing during my stay in the period 30-13 July-August, 2018. These courses are directly useful to carried out my research project.

Moreover, In the second semester, I went to International Center for Theoretical Physics, ICTP, Trieste. At ICTP, I followed many courses in order to adjust the lecture hours. I took Topology, Algebra, Complex Analysis. I got "very good" (A) in Topology which was taught by Prof. B. Zimmermann. The lectures in Algebra was given by L. Gttsche in which I scored "Excellent" (E). In complex analysis which was lectured by F. Rodriguez Villegas, I got "Good" (B). Also in the sidelines of the lectures, I made a reading course in my research area : Elliptic Curve with Prof. Villegas and and also took part in many seminars that was held at ICTP. I returned back to my host institution in the first week of January, 2019. Now on, I will carry out my research project under the supervision of Prof. Francesco Pappalardi and Prof. Luca De Feo in my host university.

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