

Report of my TMS/TFS-Guest Professor activities held at the Mathematics Department of the University of Bergen, from October 9th to November 17th, 2023

I visited the Department of Mathematics of the University of Bergen as a TMS/TFS-Guest Professor at the invitation of Prof Andreas Leopold Knutsen, in the period between 9 October 2023 and 17 November 2023. During this visit I carried out teaching and research activities, as described below.

Teaching Activity. I held a “Special Course on Riemann surfaces” of 5 credits, lasting 24 hours and devoted to the theory of Riemann Surfaces and especially to the Riemann-Hurwitz formula. The course was carried out in connection with regular courses of the Master in Mathematics. It was attended by several master students and one doctoral student.

Research Activity. This last visit to the Mathematics Department of Bergen is part of a research collaboration with Prof Knutsen, in the field of algebraic geometry, in particular on families of curves on K3 and Enriques algebraic surfaces. This research, started in 2010, has produced numerous scientific publications and various scientific activities, such as the organization of several international conferences and the joint supervision of two doctoral theses. Today our interests turn to the study of families of curves in algebraic varieties of dimension greater than or equal to 3. In particular, during my visit to Bergen we undertook the study of families of curves in Calabi-Yau 3-folds, starting from the study of the known results, with particular reference to the Clemens conjecture. We are also interested in the study of Enriques manifolds, which are complex manifolds, natural generalizations of Enriques surfaces. This is a very early stage research which we hope will give rise to a new joint research project in the short term. The research activity will continue during the current academic year.

The visit was also an opportunity to interact with the doctoral students Dario Faro, from the University of Pavia, and Simone Pesatori, from the University of Roma Tre, who were also visiting. The research activity of both of them, and in particular that of Simone, relates very closely to our recent research results on families of curves on Enriques surfaces.

Rende, Italy, November 30th, 2023

Concettina Galati

