

Introduction

This is the first of two volumes that constitute a follow-up to the CARMA Conference (Algebraic Combinatorics, Resurgence, Moulds and Applications), held at the Centre International de Rencontres Mathématiques in Luminy, France, from June 26 to 30, 2017.

The CARMA project of the French National Research Agency devoted to Algebraic Combinatorics, Resurgence, Moulds and Applications was started in 2012.

The conference CARMA 2017 aimed at taking stock of the numerous recent achievements and publications on these topics, from experts both outside and inside this research group.

The conference did notably emphasise the role of Hopf algebraic techniques and related objects such as Rota Baxter algebras, operads and Ecalle's mould calculus. They have lately proved pervasive in combinatorics as well as in many other fields, from multiple zeta values to the algebraic study of control systems and the theory of rough paths. Moreover, recent years have seen a burst of articles in various areas of theoretical physics that enhance the role of resurgent functions beyond their original applications in dynamical systems, which were also among the topics of the conference.

Some of the papers in these volumes correspond to talks given during the conference, others are original articles from participants. The contributions to the first volume essentially center about mould calculus and combinatorial Hopf algebras. The second volume mainly deals with multizetas and physical applications, although there is no clearcut separation between both.