Título: Cohomological Theory Of Crystals Over Function Fields

Autor: Bockle Gebhard/ Pink Richard

Precio: $811.11

Editorial:

Año: 2009

Tema:

Edición: 1ª

Sinopsis

ISBN: 9783037190746

This book develops a new cohomological theory for schemes in positive characteristic p and it applies this theory to give a purely algebraic proof of a conjecture of Goss on the rationality of certain L-functions arising in the arithmetic of function fields. These L-functions are power series over a certain ring A, associated to any family of Drinfeld A-modules or, more generally, of A-motives on a variety of finite type over the finite field \mathbb{F}_p. By analogy to the Weil conjecture, Goss conjectured that these L-functions are in fact rational functions. In 1996 Taguchi and Wan gave a first proof of Goss's conjecture by analytic methods à la Dwork.

The present text introduces A-crystals, which can be viewed as generalizations of families of A-motives, and studies their cohomology. While A-crystals are defined in terms of coherent sheaves together with a Frobenius map, in many ways they actually behave like constructible ètale sheaves. A central result is a Lefschetz trace formula for L-functions of A-crystals, from which the rationality of these L-functions is immediate. Beyond its application to Goss's L-functions, the theory of A-crystals is closely related to the work of Emerton and Kisin on unit root F-crystals, and it is essential in an Eichler - Shimura type isomorphism for Drinfeld modular forms as constructed by the first author.

The book is intended for researchers and advanced graduate students interested in the arithmetic of function fields and/or cohomology theories for varieties in positive characteristic. It assumes a good working knowledge in algebraic geometry as well as familiarity with homological algebra and derived categories, as provided by standard textbooks. Beyond that the presentation is largely self contained.

A publication of the European Mathematical Society (EMS). Distributed within the Americas by the American Mathematical Society.

Table of Contents