

Index Formulae for Line Bundle Cohomology on Complex Surfaces

Thursday 27 June 2019 17:15 (15 minutes)

In many string theory applications, line bundle cohomologies are required input, for example in model-building with heterotic string theory, Type II string theories, or F-theory. There exist various case-by-case methods to compute individual cohomologies, but it would be beneficial to have further understanding of and formulae for cohomologies. Recently there have been signs that closed-form expressions may exist. I will report recent progress on this: we have found general formulae that describe all line bundle cohomologies on a large class of surfaces. In particular, any cohomology on these spaces can be computed as a topological index.

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Session Classification: Parallel Session