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An Example of an Article for this Journal

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Abstract. This is a sample abstract for our example article prepared for the journal "Annales Mathématiques Blaise Pascal". This sample article provides information about how to use the cedram-ambp-new.cls LaTeX class file.

Un exemple d'article pour les Annales Mathématiques Blaise Pascal

Résumé. Ceci est un exemple de résumé de l'exemple d'article pour la revue « Annales Mathématiques Blaise Pascal ». Cet exemple d'article passe en revue des exemples d'utilisation des environnements utiles pour pouvoir écrire un vrai article.

1. Introduction

The work of Givental [1] and Liu-Lian-Yau [2] on mirror symmetry relates Gromov-Witten invariants of a quintic hypersurface in $\mathbb{P}^3$ to period integrals of Kähler structures on the mirror manifold. Givental's method uses detailed calculations of equivariant GW invariants to produce flat sections of the Dubrovin connection on the tangent bundle to the even cohomology of the hypersurface, which are then related to solutions of the Picard-Fuchs ODE for the periods on the mirror.

We would like to thank Charles Kay for several helpful conversations.

Throughout the paper, we use the following notation:

Notation 1.1. Let $\mathbb{Z}$ denote the set of integers, and let $\mathcal{A}$ denote the set of all even integers which cannot be written as the sum of two primes. Finally, let $\mathcal{B} = \mathcal{A} \cap [0, 200]$.

Definition 1.2. A Hopf algebra H is *co-commutative* if $\Delta = \tau \circ \Delta$ where Δ is the co-multiplication and τ is the switch map defined by $\tau(h_1 \otimes h_2) = h_2 \otimes h_1$.

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2. The next section

Let $*$ be an associative, commutative product on a complex vector space $\mathcal{H}$. The associated Dubrovin connection on $T\mathcal{H}$ is

$$\nabla_Y X = dX(Y) + \sqrt{-1}Y * X \tag{2.1}$$

with connection one-form $\omega(Y)(X) = \sqrt{-1}Y * X$. If $\{T_0, \ldots, T_m\}$ is a basis of $\mathcal{H}$ with

$$T_i * T_j = \Gamma_{ij}^k T_k, \tag{2.2}$$

then $\omega_j^i = \sqrt{-1}\Gamma_{\ell j}^i \, dt^\ell$ (where a typical $\alpha \in \mathcal{H}$ is $\alpha = t_i T^i$). It is fundamental that ∇ is flat because the product is associative and commutative. Note that ∇ stays flat if we replace $\sqrt{-1}$ in (2.1) by $\hbar \in \mathbb{C}$.

Proposition 2.1. *Let $*$ be a commutative, associative product on a complex vector space $\mathcal{H}$. Define matrices Γ_i, $i = 1, \ldots, \dim \mathcal{H}$ by $T_i * T_j = (\Gamma_i)_j^k T_k$ for a basis $\{T_k\}$ of $\mathcal{H}$. Then a basis of the flat sections of the associated flat Dubrovin connection on $T\mathcal{H}$ is*

$$\left\{ \exp[-\sqrt{-1}t^\ell \Gamma_\ell] \right\}_{\ell=0}^m .$$

Lemma 2.2. *Except in characteristic one,* $0 \neq 1$.

Theorem 2.3. *Even in characteristic one,* $1 + 1 = 2$.

Proof. The proof of this theorem is left for the reader. □

Corollary 2.4. *In all characteristics, we have*

$$2 + 2 = 4. \tag{2.3}$$

The second paper in this series will be devoted to applications of (2.3).

Examples 2.5. Let A consist of a set of two elements and B a set of two elements. If $A \cap B = \emptyset$, then $|A \cup B| = 4$.

The following remark can be made:

Remark 2.6. The reader can easily generalize this example to the case of three sets.

The following additional remarks can be made:

Remarks 2.7. (1) In a sequel to this article, we will analyse the case of 4 sets.

(2) Note the dependance on the number of elements.

The following conjecture has not been used.

Conjecture 2.8. *There is infinitely many prime numbers p such that $p + 2$ is prime.*

Bibliography

[1] A. Givental. Equivariant Gromov-Witten invariants. *Internat. Math. Res. Notices*, 13:613–663, 1996.

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