LaTeX TEMPLATE

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Contents

1. Degree of a Map Induced by Divisors with Weighted Coefficients

Let C be a smooth projective curve over $\mathbb{C}$ of genus 4, and view C as a subvariety of its Jacobian $A := \mathrm{Jac}(C)$ via the Abel–Jacobi map. Consider the map

$$f : C \times C \times C \longrightarrow A \qquad (p_1, p_2, p_3) \longmapsto 2p_1 + 3p_2 + 4p_3.$$

What is the degree of f onto its image? In other words, for a general point $a \in \mathrm{Im}(f)$, can we prove that $\#f^{-1}(a) = 1$?

This question is related to Brill–Noether theory, but I have not found an answer to this specific case, which concerns divisors with multiplicities. Insights from the tropical version might provide helpful ideas.

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References

[1] Jens Niklas Eberhardt. K-motives and Koszul duality. *Bulletin of the London Mathematical Society*, 54(6):2232–2253, 2022.
[2] Ravi Vakil. The rising sea: Foundations of algebraic geometry. *preprint*, 2017.

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