

WHAT IS MY TITLE

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Goal Check if $D_i = dP_n$ for any divisor D_i , where dP_n indicates that the divisor is a del Pezzo structure of degree n , where $1 \leq n \leq 9$. We will not be looking at the trivial $n = 9$ case.

Definition: a divisor has a del Pezzo structure if it is a non-singular, projective algebraic surface with an ample anti-canonical divisor class. We can obtain these surfaces by blowing up \mathbb{P}^2 at n points, for $0 \leq n \leq 8$

Steps

- Get D_i from (CY Intersection tensor from (Basis from Toric Divisors))
- Find anti-canonical bundle $-K$
- Check $K^2 = \int_X (C_1^2(dP_n) \wedge dP_n) = 9 - n$
- Check $\chi(dP_n) = \int_X (C_2(dP_n) \wedge dP_n) = 3 + n$
- Check $\chi_h(dP_n) = \int_X (Td_2(dP_n) \wedge dP_n) = 1$

- Check $\int_X (C_1(dP_n) \wedge dP_n \wedge D_i) > 0$

Intermediate tools

- Wedge product
- Integrate over hypersurfaces
- Get curves $C = D_i \cap S$ for $D_i \neq S$