

**Candelas, Philip; Font, Anamaría; Katz, Sheldon; Morrison, David R.**  
**Mirror symmetry for two-parameter models. II.** (English) Zbl 0899.14018  
Nucl. Phys., B 429, No. 3, 626-674 (1994).

Summary: [For part I see *P. Candelas, X. de la Ossa, A. Font, S. Katz* and *D. R. Morrison*, *ibid.* 416, No. 2, 481-538 (1993; see the preceding review).]

We describe in detail the space of the two Kähler parameters of the Calabi-Yau manifold  $\mathbb{P}_4^{(1,1,1,6,9)}$  [*D. R. Morrison*, in: *Journées de Géométrie algébrique, Orsay 1992, Astérisque 218*, 243-271 (1993; [Zbl 0824.14007](#))] by exploiting mirror symmetry. The large complex structure limit of the mirror, which corresponds to the classical large radius limit, is found by studying the monodromy of the periods about the discriminant locus, the boundary of the moduli space corresponding to singular Calabi-Yau manifolds. A symplectic basis of periods is found and the action of the  $\mathrm{Sp}(6, \mathbb{Z})$  generators of the modular group is determined. From the mirror map we compute the instanton expansion of the Yukawa couplings and the generalized  $N=2$  index, arriving at the numbers of instantons of genus zero and genus one of each bidegree. We find that these numbers can be negative, even in genus zero. We also investigate an  $\mathrm{SL}(2, \mathbb{Z})$  symmetry that acts on a boundary of the moduli space.

**MSC:**

[14J32](#) Calabi-Yau manifolds (algebro-geometric aspects)  
[32G20](#) Period matrices, variation of Hodge structure; degenerations  
[14D20](#) Algebraic moduli problems, moduli of vector bundles

Cited in **1** Review  
Cited in **13** Documents

**Keywords:**

Kähler parameters; Calabi-Yau manifold; mirror symmetry; monodromy of the periods; mirror map; instanton; Yukawa coupling; moduli space

**Full Text:** [DOI](#)

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