Daigo Ito

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Education

The University of Tokyo, Tokyo, Japan   April 2017 – September 2017
  – I attended after I graduated from my Japanese high school until I entered Princeton University for the sake
    of educational opportunities such as the library and seminar rooms.

Princeton University, Princeton, NJ   September 2017 – May 2021 (Expected)
  – **Degree:** Bachelor of Arts (AB) in Mathematics
  – **Undergraduate Independent Projects**, Princeton, NJ   May – July 2019
    – Advised by Professor Jonathan Hanselman.
    – Studied Morse theory on a smooth manifold and constructed Morse homology.
    – Studied Floer cohomology and A_∞-categories and constructed the Fukaya category for a symplectic
      manifold with $2c_1(TM) = 0$, following Auroux's expository paper [Aur14].
    – Constructed the homological mirror symmetry for the case of elliptic curves.
  – **Undergraduate Independent Projects**, Princeton, NJ   May – August 2020
    – Advised by Professor Joaquín Moraga.
    – Studied various topics in algebraic geometry such as plane curve singularities, higher-order deformation
      (Chapter 2 of Hartshorne [Har10]), and the Kontsevich moduli space.
    – Practiced computation of the cohomology of several sheaves such as normal sheaves, tangent sheaves,
      and twisted sheaves.
    – Wrote a paper on the computation of the (quantum) cohomology ring of flag varieties using Schubert
      calculus, with introduction to algebraic groups.
  – **Senior Independent Work (Fall 2020 (in progress))**: Birational Geometry of Algebraic Varieties and
    the Minimal Model Program
    – Advised by Professor János Kollár.
    – Organized some basic definitions and results related to divisors and went through Chapter V of
      Hartshorne [Har77].
    – Studied the minimal model program for surfaces with studies of rational curves on a surface by the first
      chapter of Prof. Kollár and Mori's textbook [KM98].

Employment

Calculus II Grader, Princeton University   February – May 2019
  – Four hours per week.
  – Graded weekly assignments for Princeton's Calculus II.
Lecturer at GFEST, University of Tsukuba   September 2020– Present
  – Four hours per week.
  – GFEST stands for Global Future Expert in Science and Technology and participants are advanced high
    school students.
  – Delivered lectures on undergraduate-level real analysis and Lagrangian mechanics.

Skills

Programming and Computational Tools
  – Familiar with Wolfram Mathematica.
  – Familiar with Java, LaTeX.

References

[Aur14] Denis Auroux. *A Beginner's Introduction to Fukaya Categories*. Springer International Publishing, Cham, 2014.

[Har77] Robin Hartshorne. *Algebraic Geometry*, volume 52 of *Graduate Texts in Mathematics*. Springer, New York, 1977.

[Har10] Robin Hartshorne. *Deformation Theory*, volume 257 of *Graduate Texts in Mathematics*. Springer, New York, 2010.

[KM98] János Kollár and Shigefumi Mori. *Birational Geometry of Algebraic Varieties*, volume 134 of *Cambridge Tracts in Mathematics*. Cambridge University Press, Cambridge, 1998.