

SHIMURA VARIETIES SEMINAR

SUMMER 2020

We will follow Milne's notes [Mil04], supplemented by Lan's notes [Lan10]. We give specific references and potential additional resources for each talk below.

- (1) Overview and scheduling talks.
- (2) Hermitian symmetric domains [Mil04, §1], [Lan10, §3].
- (3) Variations of Hodge structures and their moduli spaces [Mil04, §2], [Ven12].
- (4) Connected Shimura varieties [Mil04, §2, §3].
- (5) Shimura varieties [Mil04, §5].
- (6) Example: Siegel modular varieties [Mil04, §6], [Lan10, §3.1].
- (7) Moduli spaces of abelian varieties and Shimura varieties of PEL/Hodge types [Mil04, §7, §8].
- (8) Moduli spaces of abelian motives and general Shimura varieties [Mil04, §9].
- (9) Complex multiplication [Mil04, §10, §11].
- (10) Canonical models [Mil04, §12, §13, §14].
- (11) Compactification of Shimura varieties [Lan10, §4.1, §4.2].
- (12) Integral models of Shimura varieties (at least in PEL cases) [Lan10, §5].

More lecture notes from the Stanford learning seminar on Shimura varieties are available on

<http://virtualmath1.stanford.edu/~conrad/shimsem/>

The original references which we may also consult include [Shi70], [Del71], [Del79].

REFERENCES

- [Del71] Pierre Deligne, *Travaux de Shimura*, Séminaire Bourbaki, 23ème année (1970/71), Exp. No. 389, 1971, pp. 123–165. Lecture Notes in Math., Vol. 244. MR 0498581
- [Del79] ———, *Variétés de Shimura: interprétation modulaire, et techniques de construction de modèles canoniques*, Automorphic forms, representations and L -functions (Proc. Sympos. Pure Math., Oregon State Univ., Corvallis, Ore., 1977), Part 2, Proc. Sympos. Pure Math., XXXIII, Amer. Math. Soc., Providence, R.I., 1979, pp. 247–289. MR 546620
- [Lan10] K.-W. Lan, *An example-based introduction to shimura varieties*, 2010, Online notes, <http://www-users.math.umn.edu/~kwlان/articles/intro-sh-ex.pdf>.
- [Mil04] J. S. Milne, *Introduction to shimura varieties*, 2004, Online notes, <https://www.jmilne.org/math/xnotes/svi.pdf>.
- [Shi70] Goro Shimura, *On canonical models of arithmetic quotients of bounded symmetric domains*, Ann. of Math. (2) **91** (1970), 144–222, doi:10.2307/1970604, <https://doi-org.proxy.lib.umich.edu/10.2307/1970604>. MR 257031
- [Ven12] A. Venkatesh, *Shimura varieties*, 2012, Notes from seminar talk, <http://virtualmath1.stanford.edu/~conrad/shimsem/2013Notes/akshayshimura.pdf>.