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## The wild Brauer-Manin obstruction on K3 surfaces

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# Bibliography

- [BCP97] Wieb Bosma, John Cannon, and Catherine Playoust. The Magma algebra system. I. The user language. volume 24, pages 235–265. 1997. Computational algebra and number theory (London, 1993).
- [BK86] Spencer Bloch and Kazuya Kato.  $p$ -adic étale cohomology. *Inst. Hautes Études Sci. Publ. Math.*, (63):107–152, 1986.
- [BK05] Michel Brion and Shrawan Kumar. *Frobenius splitting methods in geometry and representation theory*, volume 231 of *Progress in Mathematics*. Birkhäuser Boston, Inc., Boston, MA, 2005.
- [BN23] Martin Bright and Rachel Newton. Evaluating the wild Brauer group. *Invent. Math.*, 234(2):819–891, 2023.
- [BO78] Pierre Berthelot and Arthur Ogus. *Notes on crystalline cohomology*. Princeton University Press, Princeton, N.J.; University of Tokyo Press, Tokyo, 1978.
- [Bri15] Martin Bright. Bad reduction of the Brauer-Manin obstruction. *J. Lond. Math. Soc. (2)*, 91(3):643–666, 2015.
- [Bö1] Lucian Bădescu. *Algebraic surfaces*. Universitext. Springer-Verlag, New York, 2001. Translated from the 1981 Romanian original by Vladimir Maşek and revised by the author.
- [BVA20] Jennifer Berg and Anthony Várilly-Alvarado. Odd order obstructions to the Hasse principle on general K3 surfaces. *Math. Comp.*, 89(323):1395–1416, 2020.
- [BZ09] Fedor A. Bogomolov and Yuri G. Zarhin. Ordinary reduction of K3 surfaces. *Cent. Eur. J. Math.*, 7(2):206–213, 2009.
- [Con12] Brian Conrad. Weil and Grothendieck approaches to adelic points. *Enseign. Math. (2)*, 58(1-2):61–97, 2012.

- [CTS87] Jean-Louis Colliot-Thélène and Jean-Jacques Sansuc. La descente sur les variétés rationnelles. II. *Duke Math. J.*, 54(2):375–492, 1987.
- [CTS96] Jean-Louis Colliot-Thélène and Shuji Saito. Zéro-cycles sur les variétés  $p$ -adiques et groupe de Brauer. *Internat. Math. Res. Notices*, (4):151–160, 1996.
- [CTS13] Jean-Louis Colliot-Thélène and Alexei N. Skorobogatov. Good reduction of the Brauer-Manin obstruction. *Trans. Amer. Math. Soc.*, 365(2):579–590, 2013.
- [CTS21] Jean-Louis Colliot-Thélène and Alexei N. Skorobogatov. *The Brauer-Grothendieck group*, volume 71 of *Ergebnisse der Mathematik und ihrer Grenzgebiete. 3. Folge. A Series of Modern Surveys in Mathematics [Results in Mathematics and Related Areas. 3rd Series. A Series of Modern Surveys in Mathematics]*. Springer, Cham, [2021] ©2021.
- [CTSS83] Jean-Louis Colliot-Thélène, Jean-Jacques Sansuc, and Christophe Soulé. Torsion dans le groupe de Chow de codimension deux. *Duke Math. J.*, 50(3):763–801, 1983.
- [Del74] Pierre Deligne. La conjecture de Weil : I. *Publications Mathématiques de l’IHÉS*, 43:273–307, 1974.
- [Gab94] Ofer Gabber. Affine analog of the proper base change theorem. *Israel J. Math.*, 87(1-3):325–335, 1994.
- [GS17] Philippe Gille and Tamás Szamuely. *Central simple algebras and Galois cohomology*, volume 165 of *Cambridge Studies in Advanced Mathematics*. Cambridge University Press, Cambridge, 2017. Second edition of [MR2266528].
- [Har00] D. Harari. Weak approximation and non-abelian fundamental groups. *Ann. Sci. École Norm. Sup. (4)*, 33(4):467–484, 2000.
- [Huy16] Daniel Huybrechts. *Lectures on K3 surfaces*, volume 158 of *Cambridge Studies in Advanced Mathematics*. Cambridge University Press, Cambridge, 2016.
- [HVA13] Brendan Hassett and Anthony Várilly-Alvarado. Failure of the Hasse principle on general K3 surfaces. *J. Inst. Math. Jussieu*, 12(4):853–877, 2013.
- [HVAV11] Brendan Hassett, Anthony Várilly-Alvarado, and Patrick Varilly. Transcendental obstructions to weak approximation on general K3 surfaces. *Adv. Math.*, 228(3):1377–1404, 2011.
- [Ier10] Evis Ieronymou. Diagonal quartic surfaces and transcendental elements of the Brauer groups. *J. Inst. Math. Jussieu*, 9(4):769–798, 2010.

- [Ier22] Evis Ieronymou. Evaluation of Brauer elements over local fields. *Math. Ann.*, 382(1-2):239–254, 2022.
- [Ier23] Evis Ieronymou. Odd torsion Brauer elements and arithmetic of diagonal quartic surfaces over number fields. *Trans. Amer. Math. Soc.*, 376(7):5241–5259, 2023.
- [Ill79] Luc Illusie. Complexe de de Rham-Witt et cohomologie cristalline. *Ann. Sci. École Norm. Sup. (4)*, 12(4):501–661, 1979.
- [IR83] Luc Illusie and Michel Raynaud. Les suites spectrales associées au complexe de de Rham-Witt. *Inst. Hautes Études Sci. Publ. Math.*, (57):73–212, 1983.
- [IS15] Evis Ieronymou and Alexei N. Skorobogatov. Odd order Brauer-Manin obstruction on diagonal quartic surfaces. *Adv. Math.*, 270:181–205, 2015.
- [ISZ11] Evis Ieronymou, Alexei N. Skorobogatov, and Yuri G. Zarhin. On the Brauer group of diagonal quartic surfaces. *J. Lond. Math. Soc. (2)*, 83(3):659–672, 2011. With an appendix by Peter Swinnerton-Dyer.
- [Kat81] Nicholas M. Katz. Crystalline cohomology, Dieudonné modules, and Jacobi sums. In *Automorphic forms, representation theory and arithmetic (Bombay, 1979)*, Tata Inst. Fund. Res. Studies in Math., 10, pages 165–246, 1981.
- [Kat89] Kazuya Kato. Swan conductors for characters of degree one in the imperfect residue field case. In *Algebraic K-theory and algebraic number theory (Honolulu, HI, 1987)*, volume 83 of *Contemp. Math.*, pages 101–131. Amer. Math. Soc., Providence, RI, 1989.
- [Kur88] Masato Kurihara. Abelian extensions of an absolutely unramified local field with general residue field. *Invent. Math.*, 93(2):451–480, 1988.
- [Liu02] Qing Liu. *Algebraic geometry and arithmetic curves*, volume 6 of *Oxford Graduate Texts in Mathematics*. Oxford University Press, Oxford, 2002. Translated from the French by Reinie Ern e, Oxford Science Publications.
- [LS23] C. D. Lazda and A. N. Skorobogatov. Reduction of Kummer surfaces modulo 2 in the non-supersingular case. *Épjournal Géom. Algébrique*, 7:Art.10, 25, 2023.
- [Man71] Yuri Ivanovich Manin. Le groupe de Brauer-Grothendieck en géométrie diophantienne. In *Actes du Congrès International des Mathématiciens (Nice, 1970)*, Tome 1, pages 401–411. 1971.
- [Mat23] Yuya Matsumoto. Supersingular reduction of Kummer surfaces in residue characteristic 2. [arXiv:2302.09535](https://arxiv.org/abs/2302.09535), 2023.

- [Mil80] James S. Milne. *Étale cohomology*, volume No. 33 of *Princeton Mathematical Series*. Princeton University Press, Princeton, NJ, 1980.
- [Mil20] J.S. Milne. Class field theory (v4.03), 2020. Available at [www.jmilne.org/math/](http://www.jmilne.org/math/).
- [Min89] Kh. P. Minchev. Strong approximation for varieties over an algebraic number field. *Dokl. Akad. Nauk BSSR*, 33(1):5–8, 92, 1989.
- [New16] Rachel Newton. Transcendental Brauer groups of products of CM elliptic curves. *J. Lond. Math. Soc. (2)*, 93(2):397–419, 2016.
- [Pag22] Margherita Pagano. An example of a Brauer-Manin obstruction to weak approximation at a prime with good reduction. *Res. Number Theory*, 8(3):Paper No. 63, 15, 2022.
- [Pag23] Margherita Pagano. The role of primes of good reduction in the brauer-manin obstruction, 2023.
- [Poo17a] Bjorn Poonen. *Rational points on varieties*, volume 186 of *Graduate Studies in Mathematics*. American Mathematical Society, Providence, RI, 2017.
- [Poo17b] Bjorn Poonen. *Rational points on varieties*, volume 186 of *Graduate Studies in Mathematics*. American Mathematical Society, Providence, RI, 2017.
- [Pre13] Thomas Preu. Example of a transcendental 3-torsion Brauer-Manin obstruction on a diagonal quartic surface. In *Torsors, étale homotopy and applications to rational points*, volume 405 of *London Math. Soc. Lecture Note Ser.*, pages 447–459. Cambridge Univ. Press, Cambridge, 2013.
- [Ser73] Jean-Pierre Serre. *A course in arithmetic*. Springer-Verlag, New York-Heidelberg, 1973. Translated from the French, Graduate Texts in Mathematics, No. 7.
- [Sil86] Joseph H. Silverman. *The arithmetic of elliptic curves*, volume 106 of *Graduate Texts in Mathematics*. Springer-Verlag, New York, 1986.
- [Sko01] Alexei Skorobogatov. *Torsors and rational points*, volume 144 of *Cambridge Tracts in Mathematics*. Cambridge University Press, Cambridge, 2001.
- [Sta] *Stacks Project*. <https://stacks.math.columbia.edu/>.
- [SZ12] Alexei N. Skorobogatov and Yuri G. Zarhin. The Brauer group of Kummer surfaces and torsion of elliptic curves. *J. Reine Angew. Math.*, 666:115–140, 2012.
- [Č19] Kęstutis Česnavičius. Purity for the Brauer group. *Duke Math. J.*, 168(8):1461–1486, 2019.

- [Wit04] Olivier Wittenberg. Transcendental Brauer-Manin obstruction on a pencil of elliptic curves. In *Arithmetic of higher-dimensional algebraic varieties (Palo Alto, CA, 2002)*, volume 226 of *Progr. Math.*, pages 259–267. Birkhäuser Boston, Boston, MA, 2004.