# One Hundred Classic and Readable Papers in Complex Geometry

**Reading levels.** Level A: a realistic goal is to read essentially the whole paper. Level B: read substantial selected sections and reconstruct the main argument. Level C: know the main theorem precisely and study the architecture of the proof, without expecting to master every technical detail on a first reading.

## I. Kähler and Hermitian geometry: structure and topology

**1. P. Deligne, P. Griffiths, J. Morgan, and D. Sullivan.** "Real Homotopy Theory of Kähler Manifolds." *Invent. Math. 29 (1975), 245–274.* EN; **Level A**.
*What to learn:* the $\partial\bar{\partial}$-lemma, formality, and the interaction between Hodge theory and topology.

**2. M. L. Michelsohn.** "On the Existence of Special Metrics in Complex Geometry." *Acta Math. 149 (1982), 261–295.* EN; **Level A**.
*What to learn:* balanced metrics, positivity of $(n-1, n-1)$-forms, and the hierarchy of Hermitian metric conditions.

**3. Y.-T. Siu.** "Every K3 Surface is Kähler." *Invent. Math. 73 (1983), 139–150.* EN; **Level A**.
*What to learn:* how positive currents and surface theory can be used to prove the existence of a Kähler metric.

**4. A. Beauville.** "Variétés kählériennes dont la première classe de Chern est nulle." *J. Differential Geom. 18 (1983), 755–782.* FR; **Level A**.
*What to learn:* the Beauville–Bogomolov decomposition and the basic geometry of Calabi–Yau and irreducible holomorphic symplectic manifolds.

**5. P. Gauduchon.** "La 1-forme de torsion d'une variété hermitienne compacte." *Math. Ann. 267 (1984), 495–518.* FR; **Level B**.
*What to learn:* Gauduchon metrics, torsion, conformal changes, and Hermitian curvature identities.

**6. P. Cherrier.** "Équations de Monge–Ampère sur les variétés hermitiennes compactes." *Bull. Sci. Math. 111 (1987), 343–385.* FR; **Level B**.
*What to learn:* the complex Monge–Ampère equation beyond the Kähler case and the role of torsion in a priori estimates.

**7. A. Lamari.** "Courants kählériens et surfaces compactes." *Ann. Inst. Fourier 49 (1999), 263–285.* FR; **Level A**.
*What to learn:* duality for positive currents and numerical criteria for Kählerness on compact complex surfaces.

**8. N. Buchdahl.** "On Compact Kähler Surfaces." *Ann. Inst. Fourier 49 (1999), 287–302.* EN; **Level A**.

*What to learn:* a direct criterion for Kählerness of compact complex surfaces and the use of intersection theory in dimension two.

**9. V. Tosatti and B. Weinkove.** "The Complex Monge–Ampère Equation on Compact Hermitian Manifolds." *J. Amer. Math. Soc. 23 (2010), 1187–1195.* EN; **Level A**.
*What to learn:* a clean modern proof of the Hermitian Calabi–Yau theorem and how to control the extra non-Kähler terms.

## II. Local pluripotential theory and positive currents

**10. E. Bedford and B. A. Taylor.** "The Dirichlet Problem for a Complex Monge–Ampère Equation." *Invent. Math. 37 (1976), 1–44.* EN; **Level A**.
*What to learn:* how to define and use the Monge–Ampère operator for locally bounded plurisubharmonic functions.

**11. E. Bedford and B. A. Taylor.** "A New Capacity for Plurisubharmonic Functions." *Acta Math. 149 (1982), 1–40.* EN; **Level B**.
*What to learn:* Bedford–Taylor capacity, quasi-continuity, and convergence of complex Monge–Ampère measures.

**12. H. J. Alexander and B. A. Taylor.** "Comparison of Two Capacities in $\mathbb{C}^n$." *Math. Z. 186 (1984), 407–417.* EN; **Level A**.
*What to learn:* the relation between extremal functions, logarithmic capacity, and pluripotential capacity.

**13. J.-P. Demailly.** "Nombres de Lelong généralisés, théorèmes d'intégralité et d'analyticité." *Acta Math. 159 (1987), 153–169.* FR; **Level A**.
*What to learn:* generalized Lelong numbers and the mechanism behind integrality and analyticity results.

**14. J.-P. Demailly.** "Regularization of Closed Positive Currents and Intersection Theory." *J. Algebraic Geom. 1 (1992), 361–409.* EN; **Level B**.
*What to learn:* regularization, analytic singularities, and how singular positive currents enter intersection theory.

**15. U. Cegrell.** "Pluricomplex Energy." *Acta Math. 180 (1998), 187–217.* EN; **Level B**.
*What to learn:* finite-energy classes and a robust domain for the local complex Monge–Ampère operator.

**16. S. Kołodziej.** "The Complex Monge–Ampère Equation." *Acta Math. 180 (1998), 69–117.* EN; **Level B**.
*What to learn:* capacity estimates and the $L^\infty$ estimate for Monge–Ampère equations with rough right-hand side.

**17. J.-P. Demailly and J. Kollár.** "Semi-continuity of Complex Singularity Exponents and Kähler–Einstein Metrics on Fano Orbifolds." *Ann. Sci. Èc. Norm. Supér. 34 (2001), 525–556.* EN; **Level A**.
*What to learn:* complex singularity exponents, their semicontinuity, and their relation to Kähler–Einstein existence.

**18. U. Cegrell.** "The General Definition of the Complex Monge–Ampère Operator." *Ann. Inst. Fourier 54 (2004), 159–179.* EN; **Level A**.

*What to learn:* the maximal natural domain on which the Monge–Ampère operator behaves continuously under decreasing approximation.

**19. Z. Błocki.** "On Uniform Estimate in Calabi–Yau Theorem." *Sci. China Ser. A 48 (2005), Suppl., 244–247.* EN; **Level A**.
*What to learn:* a remarkably short route to the key zeroth-order estimate and how to simplify a classical a priori argument.

## III. Global pluripotential theory, big classes, and positivity cones

**20. S. Boucksom.** "On the Volume of a Line Bundle." *Internat. J. Math. 13 (2002), 1043–1063.* EN; **Level A**.
*What to learn:* analytic volume, positive currents with analytic singularities, and an analytic approach to Fujita approximation.

**21. S. Boucksom.** "Divisorial Zariski Decompositions on Compact Complex Manifolds." *Ann. Sci. Èc. Norm. Supér. 37 (2004), 45–76.* EN; **Level A**.
*What to learn:* minimal multiplicities, modified nef classes, and divisorial Zariski decomposition.

**22. J.-P. Demailly and M. Păun.** "Numerical Characterization of the Kähler Cone of a Compact Kähler Manifold." *Ann. of Math. 159 (2004), 1247–1274.* EN; **Level B**.
*What to learn:* mass concentration and the analytic form of the Nakai–Moishezon philosophy.

**23. V. Guedj and A. Zeriahi.** "Intrinsic Capacities on Compact Kähler Manifolds." *J. Geom. Anal. 15 (2005), 607–639.* EN; **Level A**.
*What to learn:* global extremal functions, capacities, and the basic compact Kähler pluripotential toolkit.

**24. P. Eyssidieux, V. Guedj, and A. Zeriahi.** "Singular Kähler–Einstein Metrics." *J. Amer. Math. Soc. 22 (2009), 607–639.* EN; **Level B**.
*What to learn:* degenerate Monge–Ampère equations and singular Kähler–Einstein metrics on mildly singular varieties.

**25. S. Boucksom, P. Eyssidieux, V. Guedj, and A. Zeriahi.** "Monge–Ampère Equations in Big Cohomology Classes." *Acta Math. 205 (2010), 199–262.* EN; **Level C**.
*What to learn:* non-pluripolar products, potentials with minimal singularities, and full Monge–Ampère mass.

**26. R. Berman and S. Boucksom.** "Growth of Balls of Holomorphic Sections and Energy at Equilibrium." *Invent. Math. 181 (2010), 337–394.* EN; **Level B**.
*What to learn:* equilibrium weights, energy, and the asymptotics of spaces of holomorphic sections.

**27. S. Boucksom, J.-P. Demailly, M. Păun, and T. Peternell.** "The Pseudo-Effective Cone of a Compact Kähler Manifold and Varieties of Negative Kodaira Dimension." *J. Algebraic Geom. 22 (2013), 201–248.* EN; **Level C**.
*What to learn:* pseudo-effective classes, movable curves, and the analytic geometry behind the BDPP theorem.

**28. R. J. Berman, S. Boucksom, V. Guedj, and A. Zeriahi.** "A Variational Approach to Complex Monge–Ampère Equations." *Publ. Math. Inst. Hautes Ètudes Sci. 117 (2013), 179–245.* EN; **Level B**.

*What to learn:* energy functionals, variational solutions, and the bridge between pluripotential theory and canonical metrics.

**29. T. C. Collins and V. Tosatti.** "Kähler Currents and Null Loci." *Invent. Math. 202 (2015), 1167–1198.* EN; **Level A**.
*What to learn:* the relation between non-Kähler loci and null loci and how to detect degeneracy of nef and big classes.

## IV. $L^2$ methods, vanishing, extension, and multiplier ideals

**30. H. Skoda.** "Application des techniques $L^2$ à la théorie des idéaux d'une algèbre de fonctions holomorphes avec poids." *Ann. Sci. Èc. Norm. Supér. 5 (1972), 545–579.* FR; **Level B**.
*What to learn:* $L^2$ division, ideal membership, and the analytic mechanism behind Skoda-type theorems.

**31. J.-P. Demailly.** "Champs magnétiques et inégalités de Morse pour la $d''$-cohomologie." *Ann. Inst. Fourier 35 (1985), no. 4, 189–229.* FR; **Level B**.
*What to learn:* holomorphic Morse inequalities and the use of spectral estimates to measure positivity.

**32. T. Ohsawa and K. Takegoshi.** "On the Extension of $L^2$ Holomorphic Functions." *Math. Z. 195 (1987), 197–204.* EN; **Level A**.
*What to learn:* the basic $L^2$ extension theorem and the geometric meaning of weighted estimates.

**33. J.-P. Demailly.** "A Numerical Criterion for Very Ample Line Bundles." *J. Differential Geom. 37 (1993), 323–374.* EN; **Level B**.
*What to learn:* effective positivity, Monge–Ampère mass concentration, and analytic approaches to very ampleness.

**34. L. Manivel.** "Un théorème de prolongement $L^2$ de sections holomorphes d'un fibré hermitien." *Math. Z. 212 (1993), 107–122.* FR; **Level A**.
*What to learn:* vector-bundle-valued $L^2$ extension and how curvature hypotheses enter extension arguments.

**35. U. Angehrn and Y.-T. Siu.** "Effective Freeness and Point Separation for Adjoint Bundles." *Invent. Math. 122 (1995), 291–308.* EN; **Level B**.
*What to learn:* effective global generation by combining positivity, singular metrics, and multiplier ideals.

**36. B. Berndtsson.** "The Extension Theorem of Ohsawa–Takegoshi and the Theorem of Donnelly–Fefferman." *Ann. Inst. Fourier 46 (1996), 1083–1094.* EN; **Level A**.
*What to learn:* an efficient twisted $L^2$ argument and the structural relation between two fundamental estimates.

**37. Y.-T. Siu.** "Invariance of Plurigenera." *Invent. Math. 134 (1998), 661–673.* EN; **Level A**.
*What to learn:* how extension of pluricanonical sections yields deformation invariance of plurigenera.

**38. J.-P. Demailly, L. Ein, and R. Lazarsfeld.** "A Subadditivity Property of Multiplier Ideals." *Michigan Math. J. 48 (2000), 137–156.* EN; **Level A**.
*What to learn:* multiplier ideals, the diagonal trick, and a model argument connecting local analytic singularities to global geometry.

**39. M. Păun.** "Siu's Invariance of Plurigenera: A One-Tower Proof." *J. Differential Geom. 76 (2007), 485–493.* EN; **Level A**.
*What to learn:* a streamlined iteration of $L^2$ extension and how a long argument can be reorganized around one robust mechanism.

## V. Calabi conjecture, Kähler–Einstein metrics, and Kähler–Ricci flow

**40. S.-T. Yau.** "On the Ricci Curvature of a Compact Kähler Manifold and the Complex Monge–Ampère Equation, I." *Comm. Pure Appl. Math. 31 (1978), 339–411.* EN; **Level C**.
*What to learn:* the continuity method and the hierarchy of a priori estimates in the solution of the Calabi conjecture.

**41. A. Futaki.** "An Obstruction to the Existence of Einstein Kähler Metrics." *Invent. Math. 73 (1983), 437–443.* EN; **Level A**.
*What to learn:* how to extract a holomorphic invariant from scalar curvature and why automorphisms obstruct Kähler–Einstein metrics.

**42. H.-D. Cao.** "Deformation of Kähler Metrics to Kähler–Einstein Metrics on Compact Kähler Manifolds." *Invent. Math. 81 (1985), 359–372.* EN; **Level A**.
*What to learn:* the Kähler–Ricci flow, its scalar potential formulation, and basic long-time estimates.

**43. T. Mabuchi.** "$K$-Energy Maps Integrating Futaki Invariants." *Tohoku Math. J. 38 (1986), 575–593.* EN; **Level A**.
*What to learn:* the Mabuchi functional, its first variation, and the variational meaning of constant scalar curvature.

**44. G. Tian.** "On Kähler–Einstein Metrics on Certain Kähler Manifolds with $C_1(M) > 0$." *Invent. Math. 89 (1987), 225–246.* EN; **Level B**.
*What to learn:* Tian's $\alpha$-invariant and an integrability criterion for Fano Kähler–Einstein metrics.

**45. S. Bando and T. Mabuchi.** "Uniqueness of Einstein Kähler Metrics Modulo Connected Group Actions." *Algebraic Geometry, Sendai 1985, Adv. Stud. Pure Math. 10 (1987), 11–40.* EN; **Level B**.
*What to learn:* uniqueness modulo automorphisms and the role of energy functionals in canonical metric problems.

**46. W.-Y. Ding.** "Remarks on the Existence Problem of Positive Kähler–Einstein Metrics." *Math. Ann. 282 (1988), 463–472.* EN; **Level A**.
*What to learn:* the Ding functional and a variational/properness viewpoint on positive Kähler–Einstein metrics.

**47. A. Nadel.** "Multiplier Ideal Sheaves and Kähler–Einstein Metrics of Positive Scalar Curvature." *Ann. of Math. 132 (1990), 549–596.* EN; **Level B**.
*What to learn:* how failure of the continuity method produces multiplier ideal sheaves carrying geometric information.

**48. G. Tian.** "On Calabi's Conjecture for Complex Surfaces with Positive First Chern Class." *Invent. Math. 101 (1990), 101–172.* EN; **Level C**.

*What to learn:* compactness and singularity analysis in the Fano Kähler–Einstein problem in complex dimension two.

**49. W.-Y. Ding and G. Tian.** "Kähler–Einstein Metrics and the Generalized Futaki Invariant." *Invent. Math. 110 (1992), 315–335.* EN; **Level B**.
*What to learn:* generalized Futaki invariants and the first systematic links between degenerations and Kähler–Einstein existence.

**50. G. Tian and X. Zhu.** "Uniqueness of Kähler–Ricci Solitons." *Acta Math. 184 (2000), 271–305.* EN; **Level B**.
*What to learn:* modified Futaki invariants, soliton potentials, and uniqueness in the presence of holomorphic vector fields.

## VI. Extremal metrics, geodesics, and stability

**51. E. Calabi.** "Extremal Kähler Metrics." *Seminar on Differential Geometry, Ann. of Math. Stud. 102, Princeton Univ. Press (1982), 259–290.* EN; **Level B**.
*What to learn:* extremal metrics, the Euler–Lagrange equation for the Calabi functional, and the role of holomorphic vector fields.

**52. X. X. Chen.** "The Space of Kähler Metrics." *J. Differential Geom. 56 (2000), 189–234.* EN; **Level B**.
*What to learn:* weak geodesics, the homogeneous complex Monge–Ampère equation, and the metric geometry of Kähler potentials.

**53. S. K. Donaldson.** "Scalar Curvature and Projective Embeddings. I." *J. Differential Geom. 59 (2001), 479–522.* EN; **Level B**.
*What to learn:* balanced metrics, moment maps, and finite-dimensional approximation of constant scalar curvature metrics.

**54. S. K. Donaldson.** "Scalar Curvature and Stability of Toric Varieties." *J. Differential Geom. 62 (2002), 289–349.* EN; **Level B**.
*What to learn:* how the cscK problem becomes convex analysis on a polytope and how K-stability can be computed explicitly.

**55. X.-J. Wang and X. Zhu.** "Kähler–Ricci Solitons on Toric Manifolds with Positive First Chern Class." *Adv. Math. 188 (2004), 87–103.* EN; **Level A**.
*What to learn:* toric reduction of a geometric PDE to a real Monge–Ampère equation and existence of toric solitons.

**56. S. K. Donaldson.** "Lower Bounds on the Calabi Functional." *J. Differential Geom. 70 (2005), 453–472.* EN; **Level A**.
*What to learn:* how test configurations give analytic lower bounds and why stability should control scalar curvature.

**57. J. Ross and R. P. Thomas.** "An Obstruction to the Existence of Constant Scalar Curvature Kähler Metrics." *J. Differential Geom. 72 (2006), 429–466.* EN; **Level B**.
*What to learn:* slope stability and the construction of concrete destabilizing test configurations.

**58. D. H. Phong and J. Sturm.** "The Monge–Ampère Operator and Geodesics in the Space of Kähler Potentials." *Invent. Math. 166 (2006), 125–149.* EN; **Level B**.

*What to learn:* Bergman approximations to weak geodesics and the link between finite-dimensional geometry and complex Monge–Ampère equations.

**59. D. H. Phong and J. Sturm.** "Test Configurations for K-Stability and Geodesic Rays." *J. Symplectic Geom. 5 (2007), 221–247.* EN; **Level B**.
*What to learn:* how algebraic degenerations generate geodesic rays in the space of Kähler metrics.

**60. T. Darvas.** "The Mabuchi Geometry of Finite Energy Classes." *Adv. Math. 285 (2015), 182–219.* EN; **Level B**.
*What to learn:* the $d_p$ metrics, finite-energy completions, and the metric geometry underlying variational Kähler theory.

**61. R. J. Berman and B. Berndtsson.** "Convexity of the $K$-Energy on the Space of Kähler Metrics and Uniqueness of Extremal Metrics." *J. Amer. Math. Soc. 30 (2017), 1165–1196.* EN; **Level B**.
*What to learn:* convexity along weak geodesics and a modern route to uniqueness of canonical Kähler metrics.

## VII. Bergman kernels and quantization

**62. G. Tian.** "On a Set of Polarized Kähler Metrics on Algebraic Manifolds." *J. Differential Geom. 32 (1990), 99–130.* EN; **Level B**.
*What to learn:* approximation of Kähler metrics by Fubini–Study metrics and the first form of the Tian approximation theorem.

**63. T. Bouche.** "Convergence de la métrique de Fubini–Study d'un fibré linéaire positif." *Ann. Inst. Fourier 40 (1990), 117–130.* FR; **Level A**.
*What to learn:* heat-kernel methods and the asymptotics of the distortion/Bergman function.

**64. S. Zelditch.** "Szegő Kernels and a Theorem of Tian." *Internat. Math. Res. Notices 1998, no. 6, 317–331.* EN; **Level A**.
*What to learn:* the full Bergman/Szegő kernel expansion and a clean microlocal proof of Tian's approximation theorem.

**65. D. Catlin.** "The Bergman Kernel and a Theorem of Tian." *Analysis and Geometry in Several Complex Variables, Trends Math., Birkhäuser (1999), 1–23.* EN; **Level B**.
*What to learn:* peak sections and the local asymptotic structure of Bergman kernels.

**66. B. Shiffman and S. Zelditch.** "Distribution of Zeros of Random and Quantum Chaotic Sections of Positive Line Bundles." *Comm. Math. Phys. 200 (1999), 661–683.* EN; **Level A**.
*What to learn:* Poincaré–Lelong, random holomorphic sections, and equidistribution of zeros.

**67. Z. Lu.** "On the Lower Order Terms of the Asymptotic Expansion of Tian–Yau–Zelditch." *Amer. J. Math. 122 (2000), 235–273.* EN; **Level B**.
*What to learn:* how curvature invariants appear as coefficients in the Bergman kernel expansion.

**68. S. K. Donaldson.** "Scalar Curvature and Projective Embeddings. II." *Q. J. Math. 56 (2005), 345–356.* EN; **Level A**.
*What to learn:* finite-dimensional approximations to the Mabuchi functional and quantitative links between projective embeddings and scalar curvature.

**69. R. Berman, B. Berndtsson, and J. Sjöstrand.** "A Direct Approach to Bergman Kernel Asymptotics for Positive Line Bundles." *Ark. Mat. 46 (2008), 197–217.* EN; **Level A**.

*What to learn:* a direct local construction of the Bergman kernel parametrix without heavy microlocal machinery.

**70. R. J. Berman.** "Bergman Kernels and Equilibrium Measures for Line Bundles over Projective Manifolds." *Amer. J. Math. 131 (2009), 1485–1524.* EN; **Level B**.
*What to learn:* Bergman asymptotics in the non-strictly-positive setting and the appearance of equilibrium envelopes.

## VIII. Vector bundles, Yang–Mills theory, Higgs bundles, and direct images

**71. M. Lübke.** "Stability of Einstein–Hermitian Vector Bundles." *Manuscripta Math. 42 (1983), 245–257.* EN; **Level A**.
*What to learn:* the curvature inequality behind the Bogomolov–Lübke inequality and why Hermitian–Einstein metrics force stability-type restrictions.

**72. S. K. Donaldson.** "Anti Self-Dual Yang–Mills Connections over Complex Algebraic Surfaces and Stable Vector Bundles." *Proc. London Math. Soc. (3) 50 (1985), 1–26.* EN; **Level B**.
*What to learn:* the gauge-theoretic route from stability to Hermitian–Einstein connections on algebraic surfaces.

**73. K. Uhlenbeck and S.-T. Yau.** "On the Existence of Hermitian–Yang–Mills Connections in Stable Vector Bundles." *Comm. Pure Appl. Math. 39 (1986), Suppl., S257–S293.* EN; **Level C**.
*What to learn:* the analytic heart of the Donaldson–Uhlenbeck–Yau correspondence and the role of weak compactness.

**74. N. J. Hitchin.** "The Self-Duality Equations on a Riemann Surface." *Proc. London Math. Soc. (3) 55 (1987), 59–126.* EN; **Level B**.
*What to learn:* Higgs bundles, the Hitchin equations, spectral data, and hyperkähler geometry of moduli spaces.

**75. S. K. Donaldson.** "Twisted Harmonic Maps and the Self-Duality Equations." *Proc. London Math. Soc. (3) 55 (1987), 127–131.* EN; **Level A**.
*What to learn:* the short analytic argument linking reductive representations, harmonic metrics, and the self-duality equations.

**76. K. Corlette.** "Flat $G$-Bundles with Canonical Metrics." *J. Differential Geom. 28 (1988), 361–382.* EN; **Level B**.
*What to learn:* existence of harmonic metrics on reductive flat bundles and the analytic input to nonabelian Hodge theory.

**77. C. T. Simpson.** "Constructing Variations of Hodge Structure Using Yang–Mills Theory and Applications to Uniformization." *J. Amer. Math. Soc. 1 (1988), 867–918.* EN; **Level B**.
*What to learn:* harmonic bundles, variations of Hodge structure, and geometric applications of Yang–Mills methods.

**78. C. T. Simpson.** "Higgs Bundles and Local Systems." *Publ. Math. Inst. Hautes Ètudes Sci. 75 (1992), 5–95.* EN; **Level C**.
*What to learn:* the conceptual framework of nonabelian Hodge theory and the equivalence between Higgs and flat objects.

**79. S. Bando and Y.-T. Siu.** "Stable Sheaves and Einstein–Hermitian Metrics." *Geometry and Analysis on Complex Manifolds, World Scientific (1994), 39–50.* EN; **Level A**.
*What to learn:* admissible Hermitian–Einstein metrics and the extension of the correspondence from bundles to reflexive sheaves.

**80. B. Berndtsson.** "Curvature of Vector Bundles Associated to Holomorphic Fibrations." *Ann. of Math. 169 (2009), 531–560.* EN; **Level B**.
*What to learn:* positivity of direct images, curvature of $L^2$ metrics, and a key modern use of $\bar{\partial}$ estimates.

## IX. Deformations, moduli, Hodge theory, and hyperkähler manifolds

**81. M. Green and R. Lazarsfeld.** "Deformation Theory, Generic Vanishing Theorems, and Some Conjectures of Enriques, Catanese and Beauville." *Invent. Math. 90 (1987), 389–407.* EN; **Level B**.
*What to learn:* generic vanishing, Picard varieties, and how deformation theory interacts with Hodge-theoretic loci.

**82. G. Tian.** "Smoothness of the Universal Deformation Space of Compact Calabi–Yau Manifolds and Its Petersson–Weil Metric." *Mathematical Aspects of String Theory, Adv. Ser. Math. Phys. 1, World Scientific (1987), 629–646.* EN; **Level B**.
*What to learn:* the Bogomolov–Tian–Todorov mechanism and the Weil–Petersson geometry of Calabi–Yau moduli.

**83. W. M. Goldman and J. J. Millson.** "The Deformation Theory of Representations of Fundamental Groups of Compact Kähler Manifolds." *Publ. Math. Inst. Hautes Ètudes Sci. 67 (1988), 43–96.* EN; **Level B**.
*What to learn:* differential graded Lie algebras, quadratic singularities, and deformation theory of representation varieties.

**84. A. N. Todorov.** "The Weil–Petersson Geometry of the Moduli Space of $SU(n \geq 3)$ (Calabi–Yau) Manifolds I." *Comm. Math. Phys. 126 (1989), 325–346.* EN; **Level B**.
*What to learn:* unobstructedness and the geometry of the Weil–Petersson metric on Calabi–Yau moduli.

**85. Y. Kawamata.** "Unobstructed Deformations: A Remark on a Paper of Z. Ran." *J. Algebraic Geom. 1 (1992), 183–190.* EN; **Level A**.
*What to learn:* a short proof of unobstructedness and the algebraic structure behind the Bogomolov–Tian–Todorov theorem.

**86. C. T. Simpson.** "Subspaces of Moduli Spaces of Rank One Local Systems." *Ann. Sci. Èc. Norm. Supér. 26 (1993), 361–401.* EN; **Level B**.
*What to learn:* rank-one local systems, cohomology jump loci, and the interaction between Hodge theory and arithmetic structure.

**87. M. Verbitsky.** "Cohomology of Compact Hyperkähler Manifolds and Its Applications." *Geom. Funct. Anal. 6 (1996), 601–611.* EN; **Level A**.
*What to learn:* the Lie-algebra action on cohomology and strong restrictions on the topology of hyperkähler manifolds.

**88. D. Huybrechts.** "Birational Symplectic Manifolds and Their Deformations." *J. Differential Geom. 45 (1997), 488–513.* EN; **Level B**.
*What to learn:* how birational hyperkähler manifolds are related by deformation and how periods control the geometry.

**89. D. Huybrechts.** "Compact Hyperkähler Manifolds: Basic Results." *Invent. Math. 135 (1999), 63–113.* EN; **Level B**.
*What to learn:* projectivity criteria, deformation theory, period maps, and the basic global geometry of irreducible holomorphic symplectic manifolds.

**90. C. Voisin.** "On the Homotopy Types of Compact Kähler and Complex Projective Manifolds." *Invent. Math. 157 (2004), 329–343.* EN; **Level A**.
*What to learn:* how Hodge-theoretic constraints distinguish Kähler from projective homotopy types and how to build instructive counterexamples.

## X. Schwarz lemmas, hyperbolicity, and curvature

**91. R. Brody.** "Compact Manifolds in Hyperbolicity." *Trans. Amer. Math. Soc. 235 (1978), 213–219.* EN; **Level A**.
*What to learn:* Brody reparametrization, normal families, and the equivalence between metric and entire-curve hyperbolicity for compact manifolds.

**92. S.-T. Yau.** "A General Schwarz Lemma for Kähler Manifolds." *Amer. J. Math. 100 (1978), 197–203.* EN; **Level A**.
*What to learn:* Bochner formulas plus the maximum principle as a general method for comparing Kähler metrics.

**93. H. L. Royden.** "The Ahlfors–Schwarz Lemma in Several Complex Variables." *Comment. Math. Helv. 55 (1980), 547–558.* EN; **Level A**.
*What to learn:* how holomorphic sectional curvature controls holomorphic maps and how to sharpen Schwarz-type estimates.

**94. M. Green and P. Griffiths.** "Two Applications of Algebraic Geometry to Entire Holomorphic Mappings." *The Chern Symposium 1979, Springer (1980), 41–74.* EN; **Level B**.
*What to learn:* jet differentials and the algebraic-geometric strategy for constraining entire curves.

**95. Y.-T. Siu and S.-T. Yau.** "Compact Kähler Manifolds of Positive Bisectional Curvature." *Invent. Math. 59 (1980), 189–204.* EN; **Level B**.
*What to learn:* the differential-geometric proof of the Frankel conjecture and the relation between curvature and rational curves.

**96. N. Mok.** "The Uniformization Theorem for Compact Kähler Manifolds of Nonnegative Holomorphic Bisectional Curvature." *J. Differential Geom. 27 (1988), 179–214.* EN; **Level C**.
*What to learn:* splitting and uniformization under nonnegative bisectional curvature.

**97. Y.-T. Siu and S.-K. Yeung.** "Hyperbolicity of the Complement of a Generic Smooth Curve of High Degree in the Complex Projective Plane." *Invent. Math. 124 (1996), 573–618.* EN; **Level B**.
*What to learn:* analytic estimates for entire curves in complements and a concrete model of higher-dimensional hyperbolicity arguments.

**98. J.-P. Demailly.** “Algebraic Criteria for Kobayashi Hyperbolic Projective Varieties and Jet Differentials.” *Algebraic Geometry—Santa Cruz 1995, Proc. Sympos. Pure Math. 62, Part 2 (1997), 285–360.* EN; **Level C**.
*What to learn:* invariant jet differentials and the algebraic approach to the Green–Griffiths–Lang philosophy.

**99. D. Wu and S.-T. Yau.** “Negative Holomorphic Sectional Curvature and Positive Canonical Bundle.” *Invent. Math. 204 (2016), 595–604.* EN; **Level A**.
*What to learn:* a modern Schwarz–Ricci argument showing how negative holomorphic sectional curvature forces positivity of the canonical bundle.

**100. V. Tosatti and X. Yang.** “An Extension of a Theorem of Wu–Yau.” *J. Differential Geom. 107 (2017), 573–579.* EN; **Level A**.
*What to learn:* how to remove projectivity and derive nefness/positivity of the canonical bundle from curvature assumptions.