

Several Complex Variables

The course

This course is an introduction to the theory of functions of several complex variables. The emphasis is on the part of the theory that intersects with analysis and with partial differential equations.

Here are some of the topics that will be discussed (although not in linear order).

- Multi-variable power series
 - Reinhardt domains
 - domains of convergence
 - the Hartogs phenomenon
 - entire functions
- Integral representations
 - Cauchy integral
 - Bochner-Martinelli integral
 - Bergman kernel function
- Notions of convexity
 - linear convexity
 - polynomial convexity
 - holomorphic convexity
 - pseudoconvexity
- Levi problem
- $\bar{\partial}$ problem
- Holomorphic mappings

Prerequisites You should have some acquaintance at the first-year graduate level with both real analysis and (one-variable) complex analysis. The official prerequisites for this course are Math 608 and Math 618.

Venue The course meets 9:35–10:50 on Tuesday and Thursday in room 121 of Thompson Hall.

Web site The course web site is <http://www.math.tamu.edu/~boas/courses/650-2005a/>

Textbook There is no required textbook. The following books will be on reserve in the library with a three-day check-out period.

- H. Grauert and K. Fritzsche, *Several complex variables*, Springer-Verlag, 1976; QA331 .G69.
- Lars Hörmander, *An introduction to complex analysis in several variables*, second edition, North-Holland, 1973; QA331 .H64 1973.
- Steven G. Krantz, *Function theory of several complex variables*, second edition, American Mathematical Society, 2001; QA331.7 .K74 2001.
- Raghavan Narasimhan, *Several complex variables*, University of Chicago Press, 1971; QA331 .N29.
- R. Michael Range, *Holomorphic functions and integral representations in several complex variables*, Springer-Verlag, 1986; QA331 .R355 1986.

Grading

Grades will be based on class participation.

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The instructor

The instructor is Dr. Harold P. Boas. Office hours are in 202 Milner Hall, 11:00–12:00 on Tuesday and Thursday; also by appointment. The office telephone number is (979) 845-7269, and the email address is boas@tamu.edu.

Other information

Americans with Disabilities Act Statement from the Department of Student Life

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the office of Services for Students with Disabilities at the Department of Student Life in Cain Hall (telephone 845-1637, web site <http://studentlife.tamu.edu/ssd/>).

Academic Integrity Statement from the Aggie Honor System Office

The Aggie Honor Code states: “An Aggie does not lie, cheat or steal, or tolerate those who do.” Information about the Honor Council Rules and Procedures may be found at the web site <http://www.tamu.edu/aggiehonor/>.

several-complex-variables cv.complex-variables motivation. Share. Both these fundamental motivations apply not only to analytic functions of one variable but to analytic functions of several variables. Historically, it seems that the first analytic functions of several variables that were studied were Abelian functions, which occur in the inversion problem of Abelian integrals (that is they occur as solutions of certain systems of differential equations). Several Complex Variables. Oklahoma State University, Math 6283. Jir Lebl April 29, 2014. They are simply a whirlwind tour of several complex variables. To find the list of the books useful for reference and further reading, see the end of the notes. Note that the sections with a star are not necessary for further reading and can be skipped at first. Do let me know if you find any mistakes, typos, or if you have suggestions. 0.1 Motivation, single variable, and Cauchy's formula. The theory of functions of several complex variables is the branch of mathematics dealing with complex-valued functions. The function on the complex coordinate space. of n -tuples of complex numbers. As in complex analysis of functions of one variable, which is the case $n = 1$, the functions studied are holomorphic or complex analytic so that, locally, they are power series in the variables z_i . Equivalently, they are locally uniform limits of polynomials; or local solutions to the n -dimensional Cauchy Several complex variables. PROCEEDINGS OF SYMPOSIA IN PURE MATHEMATICS Volume XXX, Part 2. Several complex variables. American mathematical society providence, rhode island 1977. Proceedings of the symposium in pure mathematics of the american mathematical society. Several complex variables. (Proceedings of symposia in pure mathematics ; v. 30, pt.