

Research plan

Sachiko Hamano

Extra zero problem. In the extra zero problem, we study the complement of analytic subset in complex space, like knot and link complement theory. We gave examples of cylindrical domains D in \mathbb{C}^n for every $n \geq 3$ and Cousin II distributions \mathfrak{D} on D for which the extra zero problem is not solvable. The analytic subset defined by this \mathfrak{D} is reducible in D . We plan to study the existence of irreducible counterexample of extra zero problem and find more counterexamples, revealing the variety of the extra zero problem, and investigate them from the viewpoint of complex geometry. It is useful to extend the concepts of holomorphy. We have affirmatively solved the extra zero problem for every cylindrical domain in \mathbb{C}^2 , and plan to extend this result to more general cases.

Arrangement problem for analytic subsets. We plan to study the extra zero problem more deeply as the arrangement problem for analytic subsets. We define heights by the pairs using potential function, and solve the extra zero problem by finding algorithm making the energy flows lower.

Extension of concepts of holomorphy. The real and imaginary parts of a holomorphic function are pluriharmonic functions, which imposes a stronger restriction than being merely harmonic. We can not always construct a pluriharmonic function with prescribed boundary values on a given portion of the boundary. We plan to study the boundary value problem for nonlinear elliptic equation, and the linking of the singularities of solutions.