

TEMPLE UNIVERSITY

Department of Mathematics

Analysis Seminar

Room 617 Wachman Hall

Monday, April 1 2019, 2:40 p.m.

*Regular finite type conditions for smooth
pseudoconvex real hypersurfaces in \mathbb{C}^n*

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Abstract: Let M be a smooth real hypersurface in \mathbb{C}^n with $n \geq 2$. For any $p \in M$ and any integer $s \in [1, n - 1]$, Bloom in 1981 defined the following three kinds of integral invariants: invariant $a^{(s)}(M, p)$ defined in terms of contact order by complex submanifolds, invariant $t^{(s)}(M, p)$ defined by the iterated Lie bracket of vector fields and invariant $c^{(s)}(M, p)$ defined through the degeneracy of the trace of the Levi form. When M is pseudoconvex, Bloom conjectured that these three invariants are equal. Bloom and Graham gave a complete solution of the conjecture for $s = n - 1$. Bloom showed that the conjecture is true for $a^{(1)}(M, p) = c^{(1)}(M, p)$ when $n = 3$. In this talk, I will present a recent joint work with Xiaojun Huang, in which we gave a solution of the conjecture for $s = n - 2$. In particular, this gave a complete solution of the Bloom conjecture for $n = 3$.