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On Bergman completeness of non-hyperconvex domains. (English) Zbl 1007.32005
Zesz. Nauk. Univ. Jagiell. 1245, Univ. Jagell. Acta Math. 38, 169-184 (2000).

The authors present some new results concerning Bergman completeness and the boundary behaviour of the Bergman kernel in bounded pseudoconvex but not necessarily hyperconvex domains. They are interested in the following exhausting property of the Bergman kernel:

$$K_D(Z) \rightarrow \infty \quad \text{as } z \rightarrow \partial D. \quad (1)$$

The starting point for the considerations are the following two recent results: – any bounded hyperconvex domain satisfies (1), – any bounded hyperconvex domain is Bergman complete. A class of domains satisfying the above properties is presented. These classes are the following: bounded pseudoconvex balanced domains, Hartogs domains with m -dimensional balanced fibres, Hartogs-Laurent domains and Zalcman type domains (domains in the unit disc with complements composing of infinitely many closed discs). Among others, the following results are proved. All bounded pseudoconvex balanced domains are Bergman complete. Any bounded pseudoconvex Hartogs domain with m -dimensional balanced fibres over a domain with the property (1) satisfies (1). Any bounded pseudoconvex Hartogs domain over a c^i -complete domain (which implies automatically Bergman completeness) is Bergman complete. In particular, there are bounded and pseudoconvex non-fat domains that are Bergman complete and satisfy (1). On the other hand, the authors show that there are bounded fat domains in \mathbb{C} (some Zalcman type domains) not satisfying (1).

Reviewer: [Vasily A. Chernecky \(Odessa\)](#)

MSC:

[32A25](#) Integral representations; canonical kernels (Szegő, Bergman, etc.)

[32F45](#) Invariant metrics and pseudodistances in several complex variables

[32A07](#) Special domains in \mathbb{C}^n (Reinhardt, Hartogs, circular, tube) (MSC2010)

Cited in **6** Documents

Keywords:

[boundary behaviour of the Bergman kernel](#); [Bergman completeness](#); [bounded pseudoconvex domains](#); [hyperconvex domain](#); [non-hyperconvex domains](#); [pseudoconvex balanced domains](#); [Hartogs domains with \$m\$ -dimensional balanced fibres](#); [Hartogs-Laurent domains](#); [Zalcman type domains](#); [bounded fat domains](#); [pseudoconvex non-fat domains](#)