
Boundary behaviour of Bergman harmonic maps from strictly pseudoconvex domains

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We report on recent results (cf. [1]-[2]) concerning the boundary behaviour of Bergman harmonic maps $\phi : \Omega \rightarrow N$ from a smoothly bounded strictly pseudoconvex domain $\Omega \subset \mathbb{C}^n$ into a Riemannian manifold N . Our approach is an outgrowth of methods in PDEs theory essentially due to G. Cimmino (cf. [3]) and brought to CR and pseudohermitian geometry by C.R. Graham & J.M. Lee (cf. [4]). In particular we determine all proper holomorphic maps of balls $\mathbb{B}_2 \rightarrow \mathbb{B}_3$ admitting a C^3 extension up to the boundary of \mathbb{B}_2 and whose boundary values $S^3 \rightarrow S^5$ are subelliptic harmonic maps in the sense of J. Jost & C-J. Xu (cf. [5]).

[1] E. Barletta & S. Dragomir, *Proper holomorphic maps in harmonic map theory*, Annali di Matematica, **194** (2015), 1469–1498.

[2] E. Barletta & S. Dragomir, *Bergman-harmonic maps of balls*, Annali della Scuola Normale Superiore di Pisa, (5) **XV** (2016), 269–307.

[3] G. Cimmino, *Nuovo tipo di condizione al contorno e nuovo metodo di trattazione per il problema generalizzato di Dirichlet*, Rend. Circ. Mat. Palermo, **61** (1937), 177–221.

[4] C.R. Graham & J.M. Lee, *Smooth solutions of degenerate Laplacians on strictly pseudoconvex domains*, Duke Math. J., **57** (1988), 697–720.

[5] J. Jost & C-J. Xu, *Subelliptic harmonic maps*, Trans. Amer. Math. Soc., **350** (1998), 4633–4649.

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