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Siyi Zhang* (siyiz@math.princeton.edu), 409 Ravens Crest Dr., Plainsboro, NJ 08536. *Some Conformally invariant Gap Theorems for Bach-flat 4-manifolds.*

Around 10 years ago, Chang, Qing, and Yang proved a conformal gap theorem for Bach-flat metrics with the round sphere as the model case. In this article, we extend this result to prove conformally invariant gap theorems for Bach-flat 4-manifolds with $(\mathbb{C}\mathbb{P}^2, g_{FS})$ and $(\mathbb{S}^2 \times \mathbb{S}^2, g_{prod})$ as model cases. An iteration argument plays an important role in the case of $(\mathbb{C}\mathbb{P}^2, g_{FS})$ and the convergence theory of Bach-flat metrics is of particular importance in the case of $(\mathbb{S}^2 \times \mathbb{S}^2, g_{prod})$. (Received January 28, 2019)