Some constructions of geometric invariants of strictly pseudoconvex CR manifolds can be invoked by the idea of a bulk-boundary correspondence between complete Kähler-Einstein metrics and CR structures. This can be compared with the similar correspondence in conformal geometry, and based on this viewpoint, the constructions in the CR case can be extended, using Einstein ACH (asymptotically complex hyperbolic) metrics, to so-called partially integrable CR structures (or “compatible almost CR structures”).

We present, as an analogy to the previous works, how CR invariant powers of the sub-Laplacian and $Q$-curvature are defined for this class of almost CR manifolds, via the scattering theory for Einstein ACH metrics. There is also a CR version of the Fefferman–Graham obstruction tensor in conformal geometry, which governs the change of the total integral of the $Q$-curvature for infinitesimal deformations of partially integrable CR structures. Moreover, beyond analogy, it can be shown that the linearization of the CR obstruction tensor factors through the linearized Nijenhuis tensor. The relation to the $Q'$-curvature of (integrable) CR manifolds, which is a recently introduced quantity in connection with the space of CR pluriharmonic functions, will also be mentioned. (Received February 04, 2019)