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*Kohn decomposition for forms on coverings of complex manifolds constrained along fibres*

The classical result of J.J.Kohn asserts that over a relatively compact subdomain  $D$  with  $C^\infty$  boundary of a Hermitian manifold whose Levi form has at least  $n - q$  positive eigenvalues or at least  $q + 1$  negative eigenvalues at each boundary point, there are natural isomorphisms between the  $(p, q)$  Dolbeault cohomology groups defined by means of  $C^\infty$  up to the boundary differential forms on  $D$  and the (finite-dimensional) spaces of harmonic  $(p, q)$ -forms on  $D$  determined by the corresponding complex Laplace operator. In the present paper, using Kohn's technique, we give a similar description of the  $(p, q)$  Dolbeault cohomology groups of spaces of differential forms taking values in certain (possibly infinite-dimensional) holomorphic Banach vector bundles on  $D$ . We apply this result to compute the  $(p, q)$  Dolbeault cohomology groups of some regular coverings of  $D$  defined by means of  $C^\infty$  forms constrained along fibres of the coverings.

Joint with A. Brudnyi.