We announce the following result.

**THEOREM.** Suppose $X$ is a complex manifold, $A$ is an analytic subset of $X$ of codimension $\geq 1$, and $G$ is an open subset of $X$ which intersects every branch of $A$ of codimension 1. Suppose $V$ is a semipositive holomorphic vector bundle over $(X - A) \cup G$ (i.e. $V$ carries a hermitian metric with positive semidefinite curvature form). Then the sheaf $\mathcal{O}(V)$ of germs of holomorphic sections of $V$ can be extended uniquely to a reflexive coherent analytic sheaf over $X$.

**COROLLARY.** If $\dim X = 2$, then $V$ can be extended uniquely to a holomorphic vector bundle over $X$.

The special case where $A$ has codimension $\geq 2$ and $V$ is a line bundle was proved by Shiffman [3], [4]. An alternative proof of Shiffman's line bundle result was given by Harvey [1] whose proof works also when $A$ is an arbitrary closed subset of $X$ with Hausdorff $(2 \dim X - 3)$-measure 0.

Our Corollary implies a theorem of Thullen [6, Satz 2], because, in a special case general enough to give the general case, the line bundle associated to the analytic subset of codimension 1 which is to be extended is semipositive.

The proof of our Theorem follows from Hörmander's $L^2$ estimates for the $\bar{\partial}$ operator [2] and the easy part of the usual sheaf-extension techniques (see e.g. [5] and related papers listed in the bibliography there). Let $\Delta_r = \{ z \in C \mid |z| < r \}$ and $\Delta = \Delta_1$. We outline here the proof of our Theorem for the special case where $X = \Delta \times \Delta$, $A = \Delta \times \{0\}$, and $G = \Delta_{1/2} \times \Delta$.

Fix arbitrarily $\frac{1}{2} < r < 1$. Let $f_1, \ldots, f_k$ be holomorphic sections of $V$ over $\Delta \times (\Delta - \{0\})$ generating $\mathcal{O}(V)$ there. Take arbitrarily $c \in \Delta - \{0\}$.

Let $\rho = \rho(z_2)$ be a $C^\infty$ function on $\Delta - \{0\}$ with compact support such that $\rho \equiv 1$ on a neighborhood of $c$. Since $(z_2 - c)^{-1} \bar{\partial}(\rho f_j) |_{\Delta_r \times (\Delta - \{0\})}$ has
finite $L^2$-norm with respect to the given metric $h$ of $V$, by Hörmander’s method we can find a $C^\infty$ section $g_j$ of $V$ over $\Delta_r \times (\Delta - \{0\})$ such that $g_j$ has finite $L^2$-norm with respect to $h$ and $\overline{\partial} g_j = (z_2 - c)^{-1}\overline{\partial}(\rho f_j)$. It is well known that a holomorphic function defined outside an analytic subset of codimension $\geq 1$ can be extended across it if the function is locally $L^2$ at every point of the analytic subset. Hence $\rho f_j - (z_2 - c)g_j$ can be extended to a holomorphic section $s_j$ of $V$ over $(\Delta_r \times (\Delta - \{0\})) \cup G$. The sections $s_1, \ldots, s_k$ generate $\mathcal{O}(V)$ at $\Delta_r \times \{c\}$. Likewise we can find holomorphic sections of $V$ over $(\Delta \times (\Delta_r - \{0\})) \cup (\Delta_{1/2} \times \Delta_r)$ generating $\mathcal{O}(V)$ at $\Delta_{1/2} \times \{0\}$. The Theorem for this case now follows from well-known easy sheaf-extension techniques.

Theorems on extending semipositive holomorphic vector bundles across closed subsets with Hausdorff measure conditions can also be obtained.

Details will appear elsewhere.

REFERENCES

1. F. R. Harvey, A result on extending positive currents, preprint 1971.
2. L. Hörmander, $L^2$ estimates and existence theorems for the $\overline{\partial}$ operator, Acta Math. 113 (1965), 89–152. MR 31 #3691.

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