Suppose $\|v\|=1$. and consider $f(v) = \dfrac{\langle Bv, v\rangle}{\langle Av, v\rangle}$ on $\{v \in \mathbb{C}^n \mid \|v\|=1\} = K$

$\Rightarrow$ f is continuos on a compact set K
$\Rightarrow$ f has maximum al minimum.
$\Rightarrow$ $\exists\ \mu_0 \in R$ s.t

$$0 < \mu_0 + f(v) = \mu_0 + \frac{\langle Bv, v\rangle}{\langle Av, v\rangle}$$

for all v with $\|v\|=1$.

$\Rightarrow$ For $\forall v \in \mathbb{C}^n - \{0\}$, $\dfrac{\langle B\frac{v}{\|v\|}\|v\|, \frac{v}{\|v\|}\|v\|\rangle}{\langle A\frac{v}{\|v\|}\|v\|, \frac{v}{\|v\|}\|v\|\rangle} = \dfrac{\langle B\frac{v}{\|v\|}, \frac{v}{\|v\|}\rangle}{\langle A\frac{v}{\|v\|}, \frac{v}{\|v\|}\rangle}$

$\Rightarrow$ $\mu_0 + f(v) > 0$ for all $v \in \mathbb{C}^n - \{0\}$.
$\Rightarrow$ $\mu + f(v) > 0$ if $\mu \geq \mu_0$, for all $v \in \mathbb{C}^n - \{0\}$.
$\Rightarrow$ $\langle \mu Av + Bv, v\rangle \geq 0$ if $\mu \geq \mu_0$. $v \in \mathbb{C}^n - \{0\}$

$\Rightarrow$ $\mu A + B$ is positive definite ☺

Indeed, the proof of Theorem B is essentially the same as that of Kodaira's theorem, the only difference being that now we must assocrate a definite sign to the curvature operator on a general vector bundle.

First, by Kodaira - Serre duality,

$$H^q(M, \mathcal{O}(L^\mu \otimes E)) \cong H^{n-q}(M, \mathcal{O}(L^{-\mu} \otimes E^* \otimes K_M)),$$

so it will be sufficient to prove that for any E, there exists μ_0 s.t