

Likewise, from the sequence

$$0 \rightarrow \mathcal{O}_M(E \otimes L^{m-1}) \rightarrow f_{x,H}(E \otimes L^m) \rightarrow f_{x,V_\alpha}(E \otimes L^m) \rightarrow 0,$$

we see that for  $m > m_1$  as before,

$$H^0(M, f_x(E \otimes L^m)) \rightarrow H^0(V_\alpha, f_x(E \otimes L^m))$$

is surjective.

Let  $s_0 \in H^0(\mathbb{P}^N, \mathcal{O}(H))$  s.t.  $(s_0=0) = H'$ ,  $H' \cap M = V_\alpha$ .  
 $\Rightarrow$  By P138,  $\mathcal{O}(E \otimes L^m \otimes L^{-1}) \xrightarrow{\otimes s_0} \mathcal{E}(L^{-1})$  is an identification.

$\mathcal{E}(L^{-1}) \subset \mathcal{O}_M(E \otimes L^m)$  and  $\mathcal{E}(L^{-1}) =$  the sheaf of sections of  $E \otimes L^m$  vanishing to order  $\geq 1$  along  $H' \cap M = V_\alpha$ .

Thus we get the exact sequence

$$0 \rightarrow \mathcal{O}_M(E \otimes L^{m-1}) \xrightarrow{\otimes s_0} \mathcal{O}_M(E \otimes L^m) \rightarrow \mathcal{O}_{V_\alpha}(E \otimes L^m) \rightarrow 0$$

But as we saw above,  $\otimes s_0(\mathcal{O}_M(E \otimes L^{m-1})) \subset \mathcal{E}(L^{-1}) = f_{x,H}(E \otimes L^{m-1})$

i.e. the image of  $\otimes s_0$  is in  $f_{x,H}(E \otimes L^{m-1})$ .

$$\begin{array}{ccccccc} 0 & \longrightarrow & \mathcal{O}_M(E \otimes L^{m-1}) & \xrightarrow{\otimes s_0} & \mathcal{O}_M(E \otimes L^m) & \longrightarrow & \mathcal{O}_{V_\alpha}(E \otimes L^m) \rightarrow 0 \\ & & \parallel & & \uparrow & \searrow & \uparrow \\ 0 & \longrightarrow & \mathcal{O}_M(E \otimes L^{m-1}) & \xrightarrow{\otimes s_0} & f_{x,H}(E \otimes L^m) & \longrightarrow & f_{x,V_\alpha}(E \otimes L^m) \rightarrow 0 \end{array}$$