

# CURVES ON A DOUBLE SURFACE

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ABSTRACT. Let  $X$  be a doubling of a smooth surface  $F$  in a smooth threefold and let  $C \subset X$  be a locally Cohen-Macaulay curve. Then  $C$  gives rise to two effective divisors on  $F$ , namely the curve part  $P$  of  $C \cap F$  and the curve  $R$  residual to  $C \cap F$  in  $C$ . We show that a general deformation of  $R$  on  $F$  lifts to a deformation of  $C$  on  $X$  when a certain cohomology group vanishes and give applications to the study of Hilbert schemes of locally Cohen-Macaulay space curves.

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