



## The Effective Coherence Length in Anisotropic Superconductors.

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If electrons are transmitted from a normal conductor(N) into a superconductor(S), common wisdom has it that the electrons are converted into Cooper pairs within a coherence length from the interface. This is true in conventional superconductors with an isotropic order parameter. We have established experimentally that the situation is rather different in high  $T_c$  superconductors having an anisotropic order parameter. We used epitaxial thin film S/N bilayers having different interface orientations in order to inject carriers from S into N along different directions. The distance to which these carriers penetrate were determined through their effect on the  $T_c$  of the bilayers. We found that the effective coherence length is  $20\text{\AA}$  only along the **a** or **b** directions, while in other directions we find a length of  $250\pm 20\text{\AA}$  out of plane, and an even larger value for in-plane, off high symmetry directions. These observations can be explained using the Blonder-Tinkham-Klapwijk model adapted to anisotropic superconductivity. Several implications of our results on outstanding problems with high  $T_c$  junctions will be discussed.