Wolf, Millis, and Han Respond: We have interpreted currents $I_c(T)$ in SN junctions above the transition T_{cn} of the normal metal N as proximity-induced Josephson effects (PJE) and discussed these in a simplified model.[1] In a recent Letter[2] we utilized characteristic differences in $I_c(T)$ from a Ta probe (S) into ingots of UBe_{13} and Mo (N) to infer triplet pairing in UBe_{13}. An anomalous decrease in I_c of nonhysteretic Ta/UBe_{13} (but no Ta/Mo) junctions below T_{cn} indicates suppression of an induced singlet surface pair potential $\Delta_{S'}$ by triplet pairs from UBe_{13}. Kadin and Goldman[3] (KG) accept our first-order Josephson effects, but question the admittedly simplified junction free-energy model.[1] The essential issue is the following. Clearly the usual proximity effect leads to superconductivity in the N material near the S electrode; the pair amplitude in N has a magnitude and a phase, ϕ. One may derive a free energy F of the junction in terms of these variables. In the PJE the variables are fixed by minimization of F subject to the constraint that a supercurrent j_s crosses the interface. KG do not impose this constraint, and hence they find $j_s = \phi = 0$. The question, then, is which procedure better represents the physically relevant situation in which a fixed current passes through the SN system. This is a nonequilibrium problem; however, we believe that when the current density is sufficiently low, it is favorable for the externally imposed current to cross the barrier as a supercurrent, and to convert to normal current in the N region away from the interface.[4] In this case the PJE should occur and, because the voltage does not drop across the barrier, the KG analysis does not apply. Further, the KG analysis is inconsistent with the observed Fraunhofer pattern $I_c(B)$.[1] To justify the PJE theoretically one should also solve the Bogoliubov equations for the SN system assuming a fixed current. Such a calculation is in progress (previous work along these lines did not, as far as we are aware, consider the possibility of a PJE coupling). Further support for the PJE picture if not for the initial model[1] is contained in the temperature dependence of $I_c(T)$ near the junction T_c, which is concave upward, unlike in weak links. This $I_c(T)$ fits[5] a more realistic PJE model with use of the de Gennes SN boundary condition[6]: $\Delta_{S'} = \Delta_S[(NV)_{S'}/(NV)_S]$ (with NV the BCS coupling) together with the Josephson relation $I_c(T) \propto \Delta_S \Delta_{S'}$. This approach, following earlier work,[7] assumes $F = -\cos\phi$ and predicts conventional Shapiro steps as observed.[8]

KG have speculated that surface disorder on our UBe_{13} could explain the results of Ref. 2. Their model is inconsistent with the $I_c(T)$ curves in Fig. 1 of Ref. 2 which are similar near T^* for the UBe_{13} and comparison Mo samples. Measurements using a scanning Auger microprobe on the polished UBe_{13} surface[9] also gave no indication of a perturbed layer. Finally, such a layer, if present, might modify the strength of the induced singlet order $\Delta_{S'}$ as would a change in the barrier factor η, but would not change our analysis nor our conclusion that an observed suppression of I_c (and hence $\Delta_{S'}$) below the $UBe_{13}T_c$ indicates that the overlapping bulk order has different symmetry and is most probably odd-parity spin triplet. However, we wish to point out that the latter analysis assumes that the linearized gap equation decouples into separate equations for singlet and triplet gap functions. Recent work[10] indicates that in the presence of the spin-orbit coupling this separation only occurs if the interface is rotationally invariant about its normal, and also that the problem is complicated by diffuse scattering at the interface. A more careful study of these issues is in progress.[11]

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