Lawrence, Thompson, and Chen Respond: The key new experimental result reported in our paper is the existence of a temperature scale of order 40 K in CePd₃. In the paper we identified this scale as the coherence temperature, but Mihalisin and Crow (MC) rightly point out that the onset of coherence can already be observed at $T_{\text{max}} = 125$ K. To clarify our main point, then, we should perhaps speak of three energy scales in CePd₃: the high temperature $T_K$, the temperature $T_{\text{max}}$ which signals the onset of coherence, and the temperature $T_T = 40$ K below which further anomalies occur, including the growth of the 5$d$ contribution to the $4f$ form factor.

Evidence for this scale comes primarily from (a) the radically different pressure dependence of the resistivity above and below 40 K and (b) the existence of two maxima (one at $T = 0$ and another at $T_{\text{max}}$) separated by a minimum in the resistivity of Ce₀.₉₇La₀.₀₃Pd₃ alloys. If alloying destroyed coherence on the scale $T_{\text{max}}$, we would expect only one maximum; the existence of the minimum implies that two different mechanisms affect the resistivity at low temperatures.

To date we have studied the resistivity of CeMₓPd₃ alloys for $M = \text{La}$, $x = 0.03$, 0.06, and 0.09 and for $M = \text{Y, Sc}$, $x = 0.03$. Our data agree with that of Schneider and Wohleben and differ from that of MC in two significant respects. First, MC do not observe the two maxima for $x = 0.01$ and 0.03. Second, the MC data are identical for $x = 0.01$ to 0.04, while our data and those of Schneider and Wohleben show $\rho_0(x)$ to vary strongly in this range of $x$, saturating for $x \geq 0.06$. Therefore, we disagree that an "additive-impurity" model is irrelevant for $x = 0.03$.

On the other hand, the resistivity is virtually identical for different solutes ($M = \text{La, Y, Sc}$) at fixed $x$: $\rho_0(x)$ has the same value and our recent work shows that for $x = 0.03$ the temperature dependence $[\rho = \rho_0(1 - (T/T_c)^2]$ with $T_c \sim 40$--50 K is identical for the three solutes. It is the absence of a cerium atom from its appropriate site that governs the alloy resistivity. Such a situation can be described by the Hamiltonian given in our paper: a pure Anderson lattice plus a "Kondo-hole" term. In retrospect, we realize that the terminology is unfortunate since it is easy to show for a Kondo (as opposed to Anderson) lattice that the hole term has the wrong sign to give a Kondo effect. Nevertheless, if the heavy quasiparticles carry the electric current, they will be strongly scattered by such a "cerium sublattice hole," and the effect will disappear when the heavy fermions renormalize away at high temperatures. Both the observed $T^2$ coefficients and the existence of a minimum near 40 K in the alloys suggest this effect occurs on the scale $T_T$.

Most studies of CePd₃₋ₓ show a large residual resistivity $\rho_0$ when $y > 0$ and a vanishing $\rho_0$ for $y < 0$. Our explanation of this is that when $y > 0$ there will be vacancies or Pd atoms on the cerium sublattice, causing strong scattering. (AuCu₃ disorder due to excessive annealing can cause the same effect.) When $y$ is small in Ce₁₋ₓMₓPd₃+y these effects can dominate the resistivity; perhaps this is why MC observed only one maximum and no variation of $\rho_0$ with $x$. We compensated by making $y$ slightly negative.

Such large effects per solute atom are not necessarily expected in other systems. As pointed out in our paper, CePd₃ is unusual in having a very low density of carriers at $\varepsilon_F$. The resistivity will be affected more profoundly by the $4f$'s than in, say, CeSn₇ where there exists a healthy density of Sn s-p electrons to shunt the f channel.

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