Feil and Haas Reply: The purpose of our recent Letter[1] was to point out that the magneto-optical Kerr effect, whatever its microscopic origin, can be strongly enhanced at the plasma resonance frequency of charge carriers in a metal. For this purpose we presented some model calculations and additional experimental evidence from data in the literature. We claim that both the model and the conclusions presented in our Letter[1] are correct, and are clear evidence for plasma resonance enhancement of the Kerr effect.

The first objection by Schoenes and Reim concerns the influence of damping. They point out that the magneto-optical Kerr effect does not always show a pronounced structure at the plasma frequency. This is certainly true; however, we pointed out that in the vicinity of a *pronounced* plasma edge one can expect a resonance-shaped magneto-optical Kerr effect. A pronounced plasma edge at $\epsilon_{1xx}(\omega_p)=0$ is obtained only if $\epsilon_{2xx}(\omega_p)$ is small, i.e., if damping is small (and if there is no strong overlap with interband transitions). We are well aware that for sufficiently strong damping, the resonance effect will disappear; this is in the fate of all resonance phenomena.

We discussed that the complex denominator in the equation of the Kerr effect,

$$\phi_K + i\epsilon_K = \epsilon_{xy}/\epsilon_{xx}^{1/2}(1-\epsilon_{xx}), \quad (1)$$

in the case of a pronounced plasma edge can be very small and can lead to a large resonance-shaped Kerr effect. It is instructive to take a close look at the enhancement factor f:

$$f=[\epsilon_{xx}^{1/2}(1-\epsilon_{xx})]^{-1}. \quad (2)$$

The complex enhancement factor f is multiplied with ϵ_{xy} to obtain the Kerr rotation and ellipticity. For materials exhibiting a sharp plasma edge the enhancement factor is always large and resonance shaped.[2] A calculation of the enhancement factor of the Ce compounds certainly leads to the same conclusion.[3]

The remarks of Schoenes and Reim about the unphysical assumptions we made by choosing a constant $\sigma_{xy}(\omega)$ are of course correct. However, as mentioned in the Letter, a constant off-diagonal conductivity is chosen only for simplicity in order to clarify the role of the enhancement factor f.

A splitting of the plasma edge for left- and right-handed circularly polarized light as a result of exchange interaction and spin-orbit forces will result in a resonancelike peak in the Kerr-effect spectrum. But we demonstrated also by our model calculations that this does not prove the free-electron origin of ϵ_{xy} as suggested by Reim *et al.*[4] Furthermore Reim *et al.* claim that the skew-scattering frequency $\Omega=1/\tau_s$ is equal to the spin-orbit parameter ζ_c. This cannot be true. The skew-scattering lifetime τ_s accounts for the asymmetric scattering, and will therefore depend on the strength of the scattering. The spin-orbit parameter ζ_c does not depend on any scattering mechanism.

The main conclusion of our Letter was that in metallic magnetic compounds, the plasma resonance of charge carriers may induce a resonance-shaped magneto-optical Kerr-effect spectrum. Additional experimental evidence was obtained from recent measurements in dilute Au-Mn alloys. We observed a resonance-shaped Kerr effect at 2.4 eV in $Au_{95}Mn_5$ at 4 K and 4 T, precisely at the plasma energy of pure gold.[2] A related phenomenon is probably the recently observed maximum in the Kerr rotation of Fe-Cu and Fe-Ag multilayers at the plasma frequencies of the nonmagnetic components Cu and Ag, respectively.[5]

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