Erratum: "Ultrafast demagnetization by hot electrons: Diffusion or super-diffusion?" [Struct. Dyn. 3, 055101 (2016)]

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The total heat of the electron gas per volume was taken as $\gamma(T_e^2 - T_0^2)$, whereas the correct value is $\frac{1}{2}\gamma(T_e^2 - T_0^2)$. The corrected diffusion equation reads

$$\gamma T_e \partial_t T_e = k(x)\Delta T_e - G(x)(T_e - T_l) + P(t,x). \tag{3}$$

The simulation was calculated correctly in the paper.[1] In Section V (Analytical Model), the following equations need to be adapted accordingly:

$$Q_{\mathrm{dep,A}} = \frac{1}{2}\int_0^{\tilde{d}} \gamma(x)\left(T_e^2(x, t=0) - T_0^2\right) \mathrm{d}x, \tag{7}$$

$$\partial_t Q_{\mathrm{el,A}} \approx -\frac{T_0}{\tau}\bar{\gamma}\tilde{d}(T_e(t) - T_0), \tag{10}$$

$$\tau = T_0 \frac{\gamma_{\mathrm{Al}} d_{\mathrm{Al}} + \gamma_{\mathrm{Ni}} d_{\mathrm{Ni}}}{G_{\mathrm{Al}} d_{\mathrm{Al}} + G_{\mathrm{Ni}} d_{\mathrm{Ni}}}, \tag{11}$$

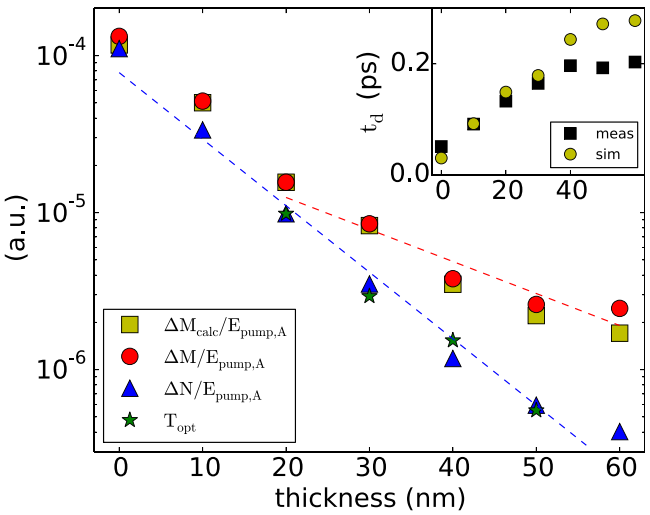

FIG. 3. Amplitude dependence of the ultrafast demagnetization (red) and the non-magnetic contrast (blue) as a function of the absorber film thickness d_{Al}, scaled by the pump pulse energy. The non-magnetic contribution follows the optical transmission. The demagnetization initially follows the non-magnetic signal but decays on a longer length scale of 23.5 nm for $d_{\mathrm{Al}} > 30$ nm. The inset shows the demagnetization time as a function of d_{Al} for the measurement and the simulation.

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$$T_e \approx \left(\sqrt{\frac{2Q_{\mathrm{dep,A}}}{\bar{\gamma}\tilde{d}} + T_0^2} - T_0 \right) e^{-t_d/\tau} + T_0. \tag{12}$$

These changes affect the result of the analytical model presented in Figure 3. The correct model is in better agreement with the experimental data.

[1]G. Salvatella, R. Gort, K. Bühlmann, S. Däster, A. Vaterlaus, and Y. Acremann, Struct. Dyn. **3**, 055101 (2016).