**Erratum: Unification of dark energy and dark matter
from diffusive cosmology
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Modifications for the paper are studied. We find that the variation with respect to scalar ϕ has a typo that changes some coefficient that does not change the statement of the paper. The variation with respect to the scalar field ϕ ,

$$\left(\frac{\lambda_1}{2} - \lambda_2\right)\ddot{\chi} + (1 - 3H\dot{\chi})\lambda_2 = \frac{\tilde{\sigma}}{\dot{\phi}a^3},$$

should be modified for Eq. (33),

$$\lambda_1\ddot{\chi} - \lambda_2(\ddot{\chi} - 3H\dot{\chi}) + 1 = \tilde{\sigma}/(\dot{\phi}a^3). \quad (33)$$

This modification changes the asymptotic values of the scalar from the value

$$\dot{\chi} = \frac{1}{3H_0} + \mathcal{O}\left(\frac{1}{a^3}\right),$$

to the value [Eq. (45)]

$$\dot{\chi} = \frac{1}{3\lambda_2 H_0} + \mathcal{O}\left(\frac{1}{a^3}\right). \quad (45)$$

Therefor the asymptotic density equations have different coefficient constants. The asymptotic density term changes from

$$\rho = H_0(3\lambda_2 - 1)\sigma \frac{\lambda_1 + \lambda_2}{6\lambda_2} \frac{1}{a^3} + V + \frac{1}{2}\dot{\phi}_0^2(1 - 2\lambda_2)a^{-\frac{3\lambda_1}{\lambda_1 + \lambda_2}},$$

to [Eq. (46)]

$$\rho = \frac{H_0\sigma_0(\lambda_1 + \lambda_2)}{3\lambda_2} \frac{1}{a^3} + V - \frac{1}{2}\dot{\phi}_0^2 a^{-\frac{3\lambda_1}{\lambda_1 + \lambda_2}}. \quad (46)$$

The sentence after Eq. (46) changes to the following:

“This particular solution corresponds to a slowly varying dark energy ($V - \frac{1}{2}\dot{\phi}_0^2 a^{-\frac{3\lambda_1}{\lambda_1 + \lambda_2}}$) approaching a constant value V , for λ_1 and λ_2 being positive, and $\lambda_1 \ll \lambda_2$ ”.

$\lambda_2 = 0$ case.—As a consequence of the modification in Eq. (33), the particular case of $\lambda_2 = 0$ yields the modified Eq. (49):

$$\dot{\chi}(t) = \dot{\chi}(0) - \frac{1}{\lambda_1}t + \int dt \frac{\tilde{\sigma}}{\lambda_1 \dot{\phi} a^3} \quad (49)$$

instead of the incorrect one:

$$\dot{\chi}(t) = \dot{\chi}(0) - \frac{2}{\lambda_1}t + \int dt \frac{2\tilde{\sigma}}{\lambda_1 \dot{\phi} a^3}.$$

The asymptotic behavior reads [Eq. (50)]

$$\dot{\chi}(t \rightarrow \infty) \rightarrow -\frac{t}{\lambda_1} \quad (50)$$

instead of the wrong one:

$$\dot{\chi}(t \rightarrow \infty) \rightarrow -\frac{2t}{\lambda_1}.$$

The coefficients in the density equation read [Eqs. (52) and (53)]

$$\alpha_1 = \sigma\dot{\chi}_0 + \frac{\sigma t}{\lambda_1} + 3\dot{\phi}_0^2 \quad (52)$$

$$\alpha_2 = \frac{\tilde{\sigma}}{\sqrt{\lambda_1(\lambda_1\dot{\phi}_0^2 + \sigma t)}} (3H_0(\lambda_1\dot{\phi}_0^2 + \sigma t) + 2\sigma) \quad (53)$$

instead of the incorrect ones:

$$\alpha_1 = \frac{5\dot{\phi}_0^2\lambda_1 + \lambda_1\sigma\chi_0 + 3\sigma t}{2\lambda_1}, \quad \alpha_2 = -\frac{2\tilde{\sigma}}{3\dot{\phi}_0 H_0 \lambda_1} (3\dot{\phi}_0^2 H_0 \lambda_1 + 3H_0 \sigma t + \sigma).$$

The sentence after Eq. (53) should be modified with the λ_2 coefficient:

“In the previous cases $\dot{\chi}$ is asymptotically a constant, equal to $1/(3\lambda_2 H_0)$ ”.

Therefore the asymptotic density term contains the coefficients [Eqs. (61) and (62)]

$$C_1 = \frac{3\dot{\phi}_0^2 + \sigma\dot{\chi}_0}{2}, \quad (61)$$

$$\gamma^2 = \frac{\sigma}{\lambda_1}, \quad C_2 = V \quad (62)$$

instead of the incorrect ones:

$$C_1 = \frac{5\dot{\phi}_0^2 + \sigma\chi_0}{2}, \quad \gamma^2 = \frac{3\sigma}{2\lambda_1}, \quad C_2 = V.$$

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