

In the documentation page [Derivation of SGPR equations](#), I believe that the next-to-last equation:

$$K_{uu}^{-1}m = L^{-\top}L_B^{-\top}c$$

is not correct. The left and right hand sides of this equation equal  $K_{uu}^{-1}\Lambda^{-1}K_{uu}^{-1}K_{uf} y \sigma^{-2}$  and  $K_{uu}^{-1}\Lambda K_{uu}^{-1}K_{uf} y \sigma^{-2}$ , as I show below. Because  $\Lambda$  is not necessarily equal to  $\Lambda^{-1}$ , I claim that the previous equation is not correct.

$$K_{uu}^{-1}m = K_{uu}^{-1}\Lambda^{-1}K_{uu}^{-1}K_{uf} y \sigma^{-2} \quad (1)$$

$$L^{-\top}L_B^{-\top}c = L^{-\top}L_B^{-\top}L_B^{-1} A y \sigma^{-1} \quad (2)$$

$$= L^{-\top}L_B^{-\top}L_B^{-1}L^{-1}K_{uf} \sigma^{-1} y \sigma^{-1} \quad (3)$$

$$= L^{-\top}B^{-1}L^{-1}K_{uf} y \sigma^{-2} \quad (4)$$

$$= K_{uu}^{-1}\Lambda K_{uu}^{-1}K_{uf} y \sigma^{-2} \quad (5)$$

Notes:

1. in Eq. 1 I used  $m = \Lambda^{-1}K_{uu}^{-1}K_{uf} y \sigma^{-2}$ , as given in the documentation page.
2. in Eq. 2 I used  $c = L_B^{-1} A y \sigma^{-1}$ , as given in the documentation page.
3. in Eq. 3 I used  $A = L^{-1}K_{uf} \sigma^{-1}$ , as given in the documentation page.
4. in Eq. 4 I used  $B = L_B L_B^{\top}$ , as given in the documentation page, and therefore  $B^{-1} = L_B^{-\top}L_B^{-1}$ .
5. in Eq. 5 I used  $K_{uu}^{-1}\Lambda K_{uu}^{-1} = L^{-\top}B^{-1}L^{-1}$ , as given in the documentation page.