

# Breaking through: the effects of a velocity distribution on barriers to dust growth (Corrigendum)

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In our original paper (Windmark et al. 2012), the simulation of the dust evolution for collision model SBF+MT, plotted in the lower panel of the original Fig. 2, mistakenly used a lower mass resolution than the rest of the simulations. Instead of a resolution of 17 mass bins per decade, only 7 bins per decade were used. Accurately resolving the coagulation in the large particle tail is crucial in this study, because numerical diffusion otherwise significantly changes the slope when a velocity distribution is included. Our error led to an artificially high mass ratio between the largest particles and those in the peak, causing an artificial breakthrough of the collisional growth barriers.

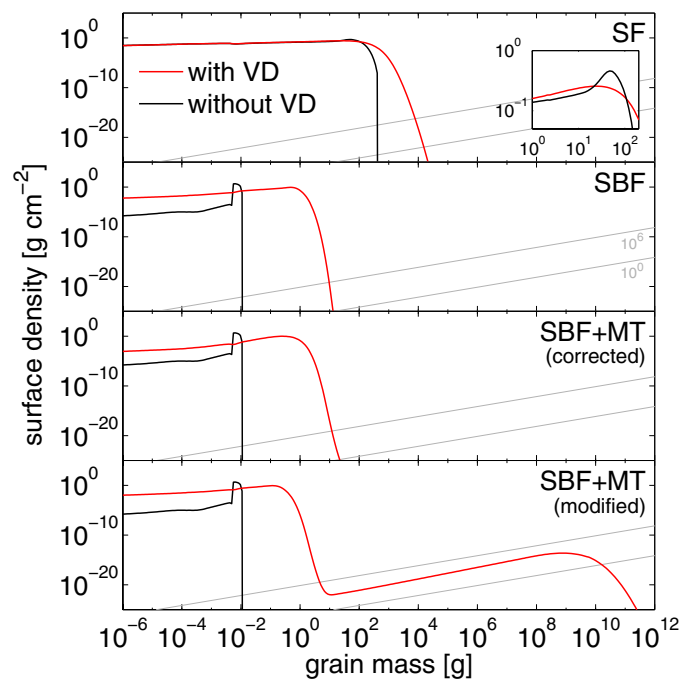
A corrected version of Fig. 2 is included in this corrigendum, showing the dust size distribution for different collision models in local simulations at 1 AU, at a time when the population of small particles has reached a quasi-steady state. With the original set of collision model parameters that were used in the Letter, breakthrough no longer occurs. However, a parameter study shows that for other realistic parameters, the barriers can still be overcome. In the bottom panel, we have included one such example (with  $v_{\text{bounce}} = 5 \text{ cm s}^{-1}$ ,  $v_{\text{frag}} = 60 \text{ cm s}^{-1}$ , and  $m_{\text{crit}} = 30$ ), where growth proceeds as described in the Letter. The conclusions that were drawn are therefore still correct, but it is clear that breakthrough is not a general outcome. In an upcoming paper, we will present the results of our parameter study in more detail.

## References

Windmark, F., Birnstiel, T., Ormel, C. W., & Dullemond, C. P. 2012, A&A, 544, L16

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**Fig. 2.** Snapshot of the size distributions for the SF, SBF, corrected SBF+MT, and modified SBF+MT collision models taken at 1 AU after  $t = 5 \times 10^4$  years, both with (red) and without (black) a velocity distribution (VD). The gray diagonal lines correspond to a total of 1 and  $10^6$  particles within a 0.1 AU annulus. The inset in the *top panel* shows an enlargement of the two peaks in the SF model.