

Abstract Submitted  
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**Microwave shielding of ultracold polar molecules** TIJS KARMAN, ITAMP, Harvard - Smithsonian Center for Astrophysics, JEREMY HUTSON, Department of Chemistry, Durham University — We use microwaves to engineer repulsive long-range interactions between ultracold polar molecules. The resulting shielding suppresses various loss mechanisms and provides large elastic cross sections. Hyperfine interactions limit the shielding under realistic conditions, but a magnetic field allows suppression of the losses to below  $10^{-14} \text{ cm}^3 \text{ s}^{-1}$ . The mechanism and optimum conditions for shielding differ substantially from those proposed by Gorshkov *et al.* [Phys. Rev. Lett. **101**, 073201 (2008)], and do not require cancellation of the long-range dipole-dipole interaction that is vital to many applications.

[1] T. Karman and J.M. Hutson, Phys. Rev. Lett. **121**, 163401 (2018)

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