A small error was recently found in the code used in this work to experimentally calibrate the magnetic bias field around the 155 G Feshbach resonance of $^{85}$Rb. The error occurred when moving from calibrating the magnetic field with $^{85}$Rb as used in our previous work to $^{87}$Rb, due to an error in the Breit-Rabi equation used.

This error in the calibration does not change the experimental results or the conclusions of the Letter, although the axes in the original Figs. 2(a) and 3(b) are labeled incorrectly due to the calibration offset. The corrected calibration puts the soliton parameter at $a_s = -2.3$ for the experimental setup used. The optimum scattering length at which the interferometer operates is at the point where a solitonic matter wave is formed, and atomic dispersion is minimized. As can be seen in the updated Fig. 3(b), it is difficult to see this because of the large scattering length scan from $-100a_0$ to $170a_0$. The experiment was therefore repeated using a finer scan of the $s$-wave scattering length around the soliton point. The experimental setup has changed since 2014, including a larger number of atoms in the condensate, a higher repeatability of the experiment, and rebuilt optical traps. This results in a soliton parameter of $a_s = -1.2a_0$ in the current experiment. Visibility data are shown in Fig. E1 (originating in this Erratum) for a $T = 2$ ms interferometer and $N = 3 \times 10^4$ Bose–Einstein-condensed $^{85}$Rb atoms. While the new data confirm the conclusions of the Letter, the effect is less pronounced.

![Visibility vs Scattering Length](image-url)

**FIG. E1.** Fringe visibility as a function of the $s$-wave scattering length $a$ for a $T = 2$ ms Mach-Zehnder atom interferometer in an optical waveguide.
The authors gratefully acknowledge the assistance of Mahasen Sooriyabandara, Simon Cornish, and Catherine Klauss for helping isolate and remove this error.