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Progress Towards Integrated Photonic Waveguides for UV Light¹ F. W. KNOLLMANN, National Institute of Standards and Technology; University of Colorado, Boulder, D. KHARAS, C. SORACE-AGASKAR, MIT Lincoln Laboratory, G. WEST, MIT, J. M. SAGE, J. CHIAVERINI, MIT Lincoln Laboratory, D. LEIBFRIED, A. C. WILSON, D. H. SLICHTER, National Institute of Standards and Technology, Boulder — Microfabricated photonic waveguides and chipintegrated light delivery holds promise for a variety of atomic physics applications, including quantum computing and portable atomic clocks. For trapped ion applications, integrated photonics can potentially ease scaling to large numbers of trapping zones and improve beam pointing stability and vibration insensitivity. Recent results have demonstrated integrated photonic delivery of all wavelengths necessary to control a single Sr+ ion, from 1092 nm to 405 nm [1]. However, many trapped ions have transitions in the UV at wavelengths below 400 nm, where integrated photonic waveguides can exhibit high losses. Previous work has tested microfabricated waveguide losses down to wavelengths of 371 nm [2]. We report progress on characterizing similar waveguides deeper in the UV, at 313 nm and 280 nm, wavelengths relevant for Be+ and Mg+ ions. [1] R. J. Niffenegger et al., arXiv 2001.05052 (2020) [2] G. N. West et al., APL Photonics 4, 026101 (2019)

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