In-place adder volume vs register size (n) using n/10 factories 10^{6} Cuccaro (2004) Ripple Carry Draper et al. (2004) Carry Lookahead Estimated volume (logical qubit · seconds) Gidney (2017) Ripple Carry 10⁵ Mogensen (2019) Carry Lookahead (this paper) (2020) Blocksize= \sqrt{n} 10^{4} (this paper) (2020) Blocksize=n/2(this paper) (2020) Blocksize=best (this paper) (2020) Carry Lookahead 10³ 10² 10^{1} 10⁰ 10⁵ 10^{2} 10³ 10^{4} Register size