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## Demonstration of a low-crosstalk double-side addressing system in a high optical access and XHV bladetrapped

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We've designed and built a high-pass optical bladetrapped, with the ability to achieve  $NA=0.66$  in two laser directions and  $NA=0.37$  in the other two. This bladetrapped has excellent performance: the vacuum can reach  $7 \times 10^{-17}$  Torr at room temperature, and the  $Q$  value of helical can reach 280. Combined with optical and electronic scheme, we demonstrate a low-crosstalk optical double-side addressing scheme and implement MS gate based on symmetrically-configured acousto-optic deflectors (AODs). We employ two 0.4 NA objective lenses in both arms of the Raman laser and obtain a beam waist of  $0.93 \pm 0.03 \mu m$ , resulting in a Rabi rate crosstalk as low as  $6.32 \times 10^{-4}$  when the neighboring ion separation is about  $5.5 \mu m$ , and realize a 2-qubit MS Gate with fidelity  $> 90\%$ . These technologies combined together provides a promising platform for quantum computing, simulation and networking.

**Primary authors:** CHEN, Yilong (University of Science and technology of China);   (XXXXXXXXXXXXXXXXXXXXXX)

**Presenters:** CHEN, Yilong (University of Science and technology of China);   (XXXXXXXXXXXXXXXXXXXXXX)

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