

Abstract Submitted  
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**Photonic temperature sensor based on microring resonators<sup>1</sup>** HAITAN XU, JQI, University of Maryland-College Park and NIST, ZEESHAN AHMED, NIST, MOHAMMAD HAFEZI, JQI, University of Maryland-College Park and NIST, JINGYUN FAN, GREGORY STROUSE, ALAN MIGDALL, NIST, JACOB TAYLOR, JQI, University of Maryland-College Park and NIST — Temperature needs to be controlled accurately and precisely in various areas, yet it is one of the most inaccurately measured physical quantities. We consider a new measurement method for temperature using the thermal response of a microring resonator built using Silicon-on-Insulator. The temperature-dependence of the index refraction maps temperature to the resonance frequency of the resonator, which can be measured with higher precision. We study the resolution and accuracy of our device, as well as future challenges for this approach for temperature metrology.

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