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Precision Penning Trap Mass Spectrometry of ^{32}S, ^{84,86}Kr and ^{129,132}Xe[1] MATTHEW REDSHAW, WEI SHI, EDMUND MYERS, Florida State University — Using a phase coherent technique to measure the cyclotron frequency of single ions in a Penning trap [1], we have performed mass measurements on ^{32}S and the two most abundant krypton and xenon isotopes ^{84}Kr, ^{86}Kr, ^{129}Xe and ^{132}Xe, to relative precisions of 0.1 ppb. This is a factor of ∼10-100 improvement in precision over current values [2]. [1] M.P. Bradley, J.V. Porto, S. Rainville, J.K. Thompson, and D.E. Pritchard, PRL **83**, 4510 (1999). [2] G. Audi, A.H. Wapstra, and C. Thibault, Nucl Phys **A729**, 337 (2003).

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