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## COSMOLOGICAL CONSTRAINTS ON A



Fig. 1. The best Voigt fit to the astronomical  $J = 0 \rightarrow 1$  rotational line of <sup>36</sup>ArH<sup>+</sup> (left) and <sup>38</sup>ArH<sup>+</sup> (right) isotopomer, respectively.

ative accuracy of the observed frequencies  $v^{\circ}$  is at least a factor of 50–100 worse than the accuracy of their laboratory counterparts  $v^{l}$ .

The required sensitivity coefficients for both isotopomers of ArH<sup>+</sup> cation were evaluated according to the previous estimates based on  $NH_3$  inversion and  $CH_3OH$  torsion-rotational line measurements at z = 0.88582 (see Table 2). One has to keep in mind, of course, that argonium and methanol lines probably originate in different regions along the line of sight.

All the presented numbers provide upper limits for