

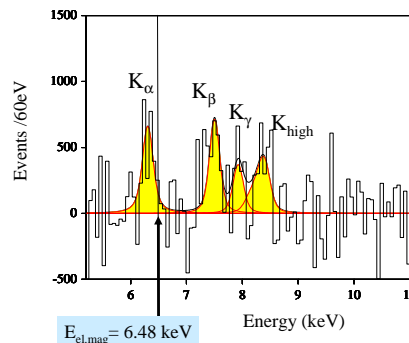
DEAR - Kaonic Hydrogen: First Results

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The DEAR¹ experiment [1] measures the energy of X-rays emitted in the transitions to the ground states of kaonic hydrogen. The shift ϵ and the width Γ of the 1s state are related to the real and imaginary parts of the complex S-wave scattering length by the Deser Trueman formula.

Figure 1: Background subtracted energy spectrum of kaonic hydrogen. For the first time K_β , K_γ , K_{high} are clearly resolved.



The preliminary results are: $\epsilon = -183 \pm 62$ eV and $\Gamma = 213 \pm 138$ eV. Both values are smaller than those from the previous experiment [2] and consistent with recent theoretical studies [3].

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References

- [1] S. Bianco et al., Rivista del Nuovo Cimento 22, No.11, (1999), 1.
- [2] M. Iwasaki et al., Phys. Rev. Lett. 78 (1997), 3067.
- [3] A. Ivanov et al., submitted to Eur. Phys. J. A, nucl-th/0310081.

¹DAΦNE Exotic Atom Research, conducted at the Frascati electron positron collider