

# Total cross section for positron scattering on noble atoms and cyclic hydrocarbons

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Recently, total cross sections (TCS) for positron scattering on atoms (He, Ar) and molecules (N<sub>2</sub>, C<sub>6</sub>H<sub>6</sub>, C<sub>6</sub>H<sub>5</sub>NH<sub>2</sub>, C<sub>6</sub>H<sub>12</sub>) in 0.5-20 eV energy range have been measured at Trento University [1].

The relatively high (from 20 e<sup>+</sup>/s to 200 e<sup>+</sup>/s) counting rate and a good beam stability allowed to obtain low (below 4%) statistical uncertainty in those measurements; small apertures in the scattering cell (1 mm in diameter) with a rather low (1 mT) transport magnetic field used make the forward scattering error small (less than 10%) even at the lowest energies.

The following consideration obtained from those data will be discussed:

- 1) TCS in the zero energy limit rise for all studied targets
- 2) TCS for benzene from Trento are in a good agreement with the recent theory [2]
- 3) discrepancy on point 1) with the most recent data of Kimura and collaborators [3] come, probably, from their much higher forward scattering uncertainty (6 mm in diameter are the scattering cell apertures)
- 4) for Ar and N<sub>2</sub> a constant TCS is observed up to the positronium formation threshold,
- 5) the rise of TCS at energies above this threshold in Ar can be attributed to the Ps-formation process [4].
- 6) possible resonances in TCS for positron scattering on atoms and molecules will be discussed.

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