

^{180m}Ta EXCITATION BY POSITRONS

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For the first time the ^{180m}Ta excitations cross-sections have been measured at the photonless annihilation of the positrons. The effective cross-sections have been obtained: $\sigma_{\text{ef}}(^{180m}\text{Ta}) = (4,0 \pm 1,0) \cdot 10^{-25} \text{ cm}^2$, and $\sigma_{\text{ef}}(^{180m}\text{Ta}) = (1,7 \pm 0,3) \cdot 10^{-27} \text{ cm}^2$ for the end point energies of the positrons about: 3,9 and 1,0 MeV, accordingly. From the effective cross-sections, the differential cross-sections σ_{ph} have been calculated. The value of the differential cross-sections considerably differs from the existing theoretical calculations. The comparison of the integral cross-sections dependence both the photonless annihilation and $(\gamma \gamma')$ -reaction with bremsstrahlung photons from energy was done. The correlation of the experimental data was shown.

Keywords: photonless annihilation, isomeric states, activation method, γ -spectroscopy.