

THE STUDY OF INTERATOMIC POTENTIALS VIA THE DSAM ANALYSIS

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The effective interatomic potential between atoms at collision energies of about 10 keV was investigated by analysing the shape of the attenuated Doppler shifted gamma-ray lines, emitted by nuclei excited and recoiled by (p,gamma) reactions during the stopping process. It is shown, that the parameters of the effective interatomic potential of the form $U(r) = A/r - B$ can be obtained by determining the first and the second momentum of the measured Doppler shifted gamma-ray lines if nuclear lifetimes are properly chosen.

As examples, the interatomic potentials between ^{31}P and ^{30}Si was studied, using $^{30}\text{Si}(p,\text{gamma})$ reaction. Results are compared with theoretically predicted interatomic potentials.