

**EXPERIMENTAL STUDIES OF CLOSED SHELLS INFLUENCE ON
FUSION-FISSION AND QUASIFISSION COMPETITION IN REACTIONS
WITH $^{40,48}\text{Ca}$**

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Fission of atomic nuclei studies is one of the main problems of the modern nuclear physics. Quasifission is considered to be one of the competing processes for fusion-fission of heavy and superheavy nuclei, preventing the formation of the complex compound nuclei. These two mechanisms are being governed by the shell effects [1-4].

The following work is dedicated to experimental studies of fusion-fission and quasifission mechanisms in $^{40,48}\text{Ca}+^{208}\text{Pb}$ at energies around the Coulomb barrier. Such choice of reactions is determined by the existence of $Z = 20$, $N = 20$, $N = 28$ closed shells in calcium isotopes. The experiment was carried out at the U-400 accelerator in FLNR JINR. Mass and total kinetic energy (MTKE) distributions were measured with the use of double-arm time-of-flight spectrometer CORSET.

In this work we presented MTKE distributions for fusion-fission and quasifission processes in reactions $^{40,48}\text{Ca}+^{208}\text{Pb}$ at incident energies 197.5-222 MeV for ^{40}Ca and 208-281 MeV for ^{48}Ca . It was also shown how the contribution of fusion-fission and quasifission processes change with the excitation energy.

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