STATUS OF SUPER HEAVY ELEMENT SYNTHESIS EXPERIMENTS AND RESULTS OF RECENT ^{48}CA + ^{251}CF EXPERIMENTS

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During the last 18 years, six new elements have been discovered and confirmed and over 40 new isotopes have been synthesized in nuclear reactions using ^{48}Ca beams and actinide targets (^{237}Np, ^{239,240,242,244}Pu, ^{243}Am, ^{245,248}Cm, ^{249}Bk, ^{249,251}Cf.) [1]. This work has resulted in a wealth of nuclear decay data and some nuclear structure information on the heaviest isotopes and decay progeny which will be discussed. The extent of the region of enhanced stability near Z=114 and N=184 is not completely known. To attempt to produce the heaviest isotopes of element 118, new experiments were performed using ^{48}Ca projectiles and a ^{251}Cf (mixed isotope) target at the Dubna Gas Filled Recoil Separator (DGFRS) located in the Flerov Laboratory of Nuclear Reactions in Dubna. Progress on the production of ^{294}118 and heavier isotopes of element 118, cross-section measurements, and nuclear decay properties will be discussed. The probability that observed decay chains are due to random events occurring in the detectors or electronics rather than correlated decay chains, using the LLNL-developed method of Monte Carlo Random Probability analysis [2-3] will be discussed. This probability will be discussed for recent ^{48}Ca + ^{239,240}Pu experiments in addition to the element 118 experiment and will be compared with other techniques for estimating such probabilities in super heavy element production reactions in which few decay chains are observed.

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