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The current status of Zr-Nb isobar separation experiments for future ^{93}Zr AMS measurement WENTING LU, PHILIPPE COLLON, YOAV KASHIV, DANIEL ROBERTSON, CHRISTOPHER SCHMITT, MATTHEW BOWERS, KAREN OSTDIEK, WILLIAM BAUDER, University of Notre Dame — The rare isotope ^{93}Zr ($t_{1/2}$ = 1.6 Ma) can be produced (1) in the *s*-process, (2) by the spontaneous fission of Uranium and Plutonium, and (3) by the activation of cladding Zr in nuclear reactors. The production method (1) makes it relevant in astrophysical modeling of nucleosynthesis processes, while (2) and (3) makes it of interest to people dealing with nuclear waste management and transmutation study. The main challenge in AMS detection of ^{93}Zr is the adequate separation from its stable isobar ^{93}Nb which is only one atomic number away. The nuclear Science Laboratory at the University of Notre Dame is developing the capability to measure ^{93}Zr by AMS, featuring the combination of gas-filled magnet with the position-sensitive parallel grid avalanche counter and gas chamber (ionization chamber and Bragg curve detector). The chemical reduction and the suppression in the ion source of ^{93}Nb have been deemed as necessary.

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