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**Memo CP-C/349**

**DATE:** August 11, 2004  
**TO:** Distribution  
**FROM:** V. McLane  
**SUBJECT:** Particle specification and long reaction strings.

For DA/DA and DA/DA/DE data, I have come up with a fairly long reaction string. I can foresee in the future the strings getting even longer, especially in the compilation of heavy ion reactions and radioactive ion beam data.

Problem 1: When the particles considered are heavy ions, and neither is the residual nucleus, a particle code must be given in SF7. I propose that shortened versions of the nuclide code be used, for example, BE10 instead of 5-BE-10. This saves us 3 or 4 characters per code, and will put off the time when we have to deal with problem 2).

(3-LI-7(3-LI-7,2A)2-HE-6,PAR,DA/DA,BE10/A+HE6,REL)

Problem 2: With the compilation of heavy ion data, the reaction codes can easily exceed 55 characters. Again, this can be solved in the short time by allowing shortened versions of the nuclide code in SF2 and SF3. However, this may not be a long term solution as the quantities could still exceed 55 characters. A completely fictitious example with 75 characters is:

(29-CU-63(3-LI-7,2-HE-6+3-LI-6)27-CO-58,,DA/DA/DE,2-HE-6/3-LI-6/3-LI-6,REL)

this would be cut down to the following with 66 characters using the solution given for problem 1).

(29-CU-63(3-LI-7, 2-HE-6+3-LI-6)27-CO-68,,DA/DA/DE,HE6/LI6/LI6,REL)

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