**Nuclear Data Section**

**International Atomic Energy Agency**

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**Memo CP-D/970**

**Date:** 15 January 2019

**To:** Distribution

**From:** N. Otsuka

**Subject: REACTION codes with SF6=POL and SF8=ASY**

All data sets coded with REACTION codes having SF6=POL and SF8 including ASY were checked.

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| --- | --- | --- |
| **Subentry** | **Actual quantity compiled** | **Proposed action** |
| 13627.002-003 | Target and projectile spins in parallel and those in anti-parallel | Ok |
| 13673.002-003 | Target and projectile spins in parallel and those in anti-parallel | SF3: SCT →TOT (transmission) |
| 13780.002.3 | Projectile beam with positive helicity and negative helicity on resonance. | SF3: SCT → TOT (transmission). SF8: Use DSP/ASY/MSC. |
| 21312.002-003 | Target and projectile spins in parallel and those in anti-parallel. The asymmetry in EXFOR definition multiplied by 2. | SF3: EL → TOT (transmission). SF5: Use TRS. SF8: Use DSP/ASY/FCT. |
| 22250.002-007 | Projectile beam with positive helicity and negative helicity on resonance. | SF5: Add LON. SF8: Use DSP/ASY/MSC. |
| 23106.002-004 | They seem very different from those compiled with SF8=DSP/ASY. | Delete them, or propose quantity codes with submission of their definitions for LEXFOR. |
| 41388.003 |
| 41484.003-013 |

Note that the modifier DSP means cross section difference σ↑↓-σ↑↑ where ↑↑ (↑↓) denotes the target spin and projectile spin are in parallel (anti-parallel). This modifier is used with the branch code TRA (transverse polarization) or LON (longitudinal polarization).

**Addition to LEXFOR “Polarization”**

**Spin-spin asymmetry**

ε=(Np-Na)/(Np+Na)

where Np and Na are counts from the reaction between target and projectile which spins are in parallel (p) and anti-parallel (a), respectively.

**REACTION Coding:** TRS or LON in SF5, POL in SF6, DSP/ASY in SF8.

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