MEMO CP-C/63

Date: August 30, 1979

From: T.W. Burrows TWB

Subject: New fitting-coefficient modifier codes

In polarization measurements, authors will often give their data in the form of $\sigma(E;\theta)\cdot P(E;\theta)$ with coefficients obtained by fitting these data with an equation containing associated Legendre polynomials or an equation containing a sum in power of $\sin^2\theta$. Since we have run into these representations in our coding of neutron-source reaction data, we suggest the following additions:

Dictionary 34:

AL1	Coefficients for first-order associated Legendre functions of the first kind.
SN2	Coefficients for a sum in power of sine^2.

Dictionary 36:

,POL/DA,,AL1	NO	(DIFFERENTIAL POLARIZATION, COEFFICIENTS OF FIRST-ORDER ASSOCIATED LEGENDRE OF THE FIRST KIND)
,POL/DA,,SN2	NO	(DIFFERENTIAL POLARIZATION, COEFFICIENTS FOR A SUM IN POWER OF SINE**2).

A proposed addition to LEXFOR under Fitting Coefficients is attached.

Coefficients of Associated Legendre Functions of the First Kind

Definition: Coefficients from fitting $\sigma(E;\theta)\cdot P(E;\theta)$ by an equation containing a sum of associated Legendre polynomials of the first kind.

Reaction - Codes, for instance:

(— (D,N) —,,DA)*(—(D,N)—,,POL/DA,,AL1)
= coefficients of a fit to $\sigma(E;\theta)\cdot P(E;\theta)$

(dimension e.g. mb/sr) = $b_0(E)+\sum_{\ell=1}^{n} b_\ell(E)P_\ell^1(\cos\theta)$

Coefficients of a Sine^2 Power Expansion

Definition: Coefficients from fitting $\sigma(E;\theta)\cdot P(E;\theta)$ by an equation containing a sum in power of sine^2.

Reaction - Codes, for instance:

(— (D,N) —,,DA)*(— (D,N) —,,POL/DA,,SN2)

= coefficients of a fit to $\sigma(E;\theta)\cdot P(E;\theta)$

(dimension e.g. mb/sr) = $b_0(E)+\sum_{\ell=1}^{n} b_\ell(E)\sin^{2\ell}(\theta)$

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