

## <sup>35</sup>S - Comments on Evaluation of Decay Data by V. P. Chechev

### 1. Half-Life

In the literature there are many measurements of the <sup>35</sup>S half-life and they were all made before 1970 (Table 1). Omitting the measurements results without uncertainties /5,6/, the recommended value of  $T_{1/2}(^{35}\text{S})$  could be obtained as the weighted average of the 11 values /1-3,7-14/. However, since the available data set is discrepant and the  $\chi^2$  value (= 66,6) exceeds the tabulated  $(\chi^2)_{10}^{0,05} = 18,3$  more than three times, the recommended value has been obtained using the modified Bayesian procedure (MBAYS) /15/; this gives  $T_{1/2}(^{35}\text{S}) = 87,32(16)$  days.

Table 1.  
Measurements results and the recommended value for the <sup>35</sup>S half-life.

Year	Half-life of <sup>35</sup> S, days	Measurement method	Reference	
			NSR keynumber	No.
1940	88(5)	GM	40Le**	1
1941	88(3)	GM	41Ka**	2
1943	87,1(12)	GM	43He**	3
(1947)			(47Hu06)	4
1949	88	GM	49Ma**	5
1952	80	GM	52Ru23	6
1958	87,16(10)	pc	58Se49	7
1959	88,8(10)	pc	59Ca12	8
1959	86,35(17)	pc	59Co56	9
1961	89,0(5)	pc	61Wy01	10
1961	87,1(9)	calorim	61Oz01	11
1965	87,9(3)	pc	65Fl02	12
1968	87,39(10)	4 $\pi$ pc	68Wo06	13
1969	87,48(13)*)	4 $\pi$ pc	69La34	14
Weighted average		/1-3,7-14/	87,32(6) days	
Unweighted average		/1-3,7-14/	87,69(24) days	
Recommended value			87,32(16) days	

Conventional designations in the third column:  
measurement of counting rate decrease by Geiger-Müller counter (GM),  
proportional counter (pc),  
calorimeter (calorim),  
4 $\pi$  proportional counter (4 $\pi$ pc).

\*) In /14/ the uncertainty of  $\pm 0,40$  days is given for the confidence level of 0,99 (3 $\sigma$ ).

\*\* NSR keynumber is not found

## 2. Decay Energy and Characteristics of Electron Emission ( $\beta^-$ )

The decay energy of <sup>35</sup>S has been adopted using the evaluations of Audi and Wapstra /16, 17/.

The end-point of the <sup>35</sup>S  $\beta^-$ -spectrum has been obtained from the correlation

$E_{\beta^-} = Q_{\beta^-} - E_{\Gamma}$  where  $E_{\Gamma} = 3$  eV is the maximum recoil energy of <sup>35</sup>Cl atom.

The average energy of the electrons per disintegration has been calculated for an allowed form of  $\beta^-$ -spectrum (see /18/) taking into account the adopted value of  $Q_{\beta^-}$ .

## 3. References

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