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Brookhaven National Laboratory
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Memo CP-C/390 (Draft)

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To: Distribution, see list bellow
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Subject: Proposal to unify some unit symbols in EXFOR Dictionary 25

EXFOR history development is rather long and with gradual complication of measured reaction properties, the physical unit symbols defined in dictionary developed too. Because of limitation posed by rigid EXFOR format, the unit symbols in Dictionary 25 differ greatly from internationally accepted MKS units. The situation is even more complicated by the fact, that several symbols are used for the same unit. As an example, the unit μb is coded in EXFOR in different combinations as MICRO-B, MU-B or MUB. This situation causes, that EXFOR is in many cases incomprehensible to novice user.

In this Memo we first summarize different usage of various units symbols and then propose very limited number of changes to Dictionary 25.

1. Multiple notation for the same unit in Dictionary 25

A. Basic physical units

1. Coulomb (C)

		Dictionary 25 usage	
	TOTAL	COUL	C
Occurence	7	4	3
Example		MBQ/COUL	MBQ/C/MEV

2. Second (s)

		Dictionary 25 usage	
	TOTAL	SEC	S
Occurence	15	14	1
Example		CM3/SEC	CM3/S/MOL

B. Prefixes

1. milli (m)

		Dictionary 25 usage			
	TOTAL	**MILLI-***	**MILLI***	**MI-***	**M***
Occurence	36	**5**	**1**	**1**	**30**
Example		**MILLI-EV**	**MB*MILLIEV**	**B/SR/MI-EV**	**MB**

2. micro (μ)

		Dictionary 25 usage			
	TOTAL	**MICRO-***	**MICRO***	**MU-***	**MU***
Occurence	33	**2**	**3**	**2**	**26**
Example		**MICRO-B**	**MICROSEC**	**MU-B/MEV**	**MUB/SR2**

3. nano (n)

		Dictionary 25 usage	
	TOTAL	**NANO-***	**N***
Occurence	9	**1**	**8**
Example		**NANO-EV**	**NB**

C. EXFOR specials

1. Particles (incident)

			Dictionary 25 usage		
	TOTAL	PART	**PT**	**INC**	**IN**
Occurence	10	2	**1**	**5**	**2**
Example		GAM/PART	**G/PT/SR**	**PC/INC**	**PRT/IN/MEV**

2. Particles (emitted)

			Dictionary 25 usage			
	TOTAL	PART	**PRT**	**PC**	**PT**	**P**
Occurence	21	2	**10**	**2**	**4**	**3**
Example		PART/MUAHR	**PRT/INC**	**PC/FIS**	**PT/FIS/MEV**	**P/FS/MEVSR**

3. Gammas

		Dictionary 25 usage	
	TOTAL	**GAM**	**G**
Occurence	3	**2**	**1**
Example		**GAM/PART**	**G/PT/SR**

D. Mathematical operations

1. Power of two

	Dictionary 25 usage	
	***2**	**-SQ**
Example	**MB/SR2MEV2**	**MB*EV-SQ**

2. Division

	Dictionary 25 usage	
	with /	**without /**
Example	**MB/SR2/MEV**	**MB/SR2MEV2**

3. Multiplication

	Dictionary 25 usage	
	with *	**without ***
Example	**B*MEV/SR**	**MUB/SRGEVC**
	usually in Nominator	usually in Denominator

It is difficult to unify all symbols in Dictionary 25. We propose to unify at present the usage of prefix symbols micro (μ) to MU, except for symbol MICROSEC for μs, i.e.

MICRO- -> MU
MU- -> MU

and change symbol -SQ for power of two to 2.

Following table shows proposed changes and number of affected data sets.

Current code	Expansion	Proposed code	# of data sets
GY*M-SQ	Grey * square meters	GY*M2	69
MICROSEC/M	microseconds per Meter	MUSEC/M	97
FERMI	fermis	FM	821
MILLI-MU	milli-microns	(Delete)	0
MICRO-B	microbarn	MUB	1641
MU-B/MEV	microbarn/MeV	MUB/MEV	125
MU-B/SR	microbarn/sr	MUB/SR	3678
G/CM-SQ	grams per centimeters-square	G/CM2	185
PRD/MUCOUL	products/micro-Coulomb	PRD/MUC	18
PRT/MUCOUL	particles/micro-Coulomb	PRT/MUC	5
B*EV-SQ	barns * eV-squared	B*EV2	249
MB*EV-SQ	millibarns * eV-squared	(Delete)	0

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