

Wholeness Chart 2-1. Conversions between Natural, Hybrid, and cgs Numeric Quantities

<u>Natural Units</u>		<u>Hybrid Units</u>		<u>cgs Units</u>	
$c = \hbar = 1$		$c = 2.99 \times 10^{10}$ cm/s $\hbar = 6.58 \times 10^{-22}$ MeV-s $\hbar c = 1.973 \times 10^{-11}$ MeV-cm		conversion factor $F = 1.602 \times 10^{-6}$ ergs/MeV	
Quantity, units of (MeV) ^{<i>M</i>}	<i>M</i>	Multiply ← value by ↓ to get →	in MeV-cm-s	Multiply ← value by ↓ to get →	in cgs
energy	1	1	MeV	<i>F</i>	ergs
mass, <i>m</i>	1	$1/c^2$	MeV-s ² /cm ²	<i>F</i>	erg-s ² /cm ² = gs
length	-1	$\hbar c$	cm	1	cm
time	-1	\hbar	s	1	s
velocity	0	<i>c</i>	cm/s	1	cm/s
acceleration, a	1	c/\hbar	cm/s ²	1	cm/s ²
force	2	<i>ma</i> factors = $1/c\hbar$	MeV/cm	<i>F</i>	ergs/cm = dynes
\hbar (= 1)	0	\hbar	MeV-s	<i>F</i>	erg-s
Hamiltonian	1	1	MeV	<i>F</i>	ergs
Hamiltonian density	4	$1/(\hbar c)^3$	MeV/cm ³	<i>F</i>	ergs/cm ³
Lagrangian	1	1	MeV	<i>F</i>	ergs
Lagrangian density	4	$1/(\hbar c)^3$	MeV/cm ³	<i>F</i>	ergs/cm ³
action <i>S</i>	0	\hbar	MeV-s	<i>F</i>	erg-s
fine structure constant	0	1	unitless	1	unitless
cross section	-2	$(\hbar c)^2$	cm ²	1	cm ²