Table of Baryons

Particle	Symbol	Makeup	Rest mass MeV/c^2	B	S	Lifetime	Decay Modes
Proton	p	uud	938.3	+1	0	Stable	...
Neutron	n	ddu	939.6	+1	0	920	$pe^-\bar{\nu}_e$
Lambda	Λ^0	uds	1115.6	+1	-1	2.6x10^-10	$p\pi^-$, $n\pi^0$
Sigma	Σ^+	uus	1189.4	+1	-1	0.8x10^-10	$p\pi^0$, $n\pi^+$
Sigma	Σ^0	uds	1192.5	+1	-1	6x10^-20	$\Lambda^0\gamma$
Sigma	Σ^-	dds	1197.3	+1	-1	1.5x10^-10	$n\pi^-$
Delta	Δ^{++}	uuu	1232	+1	0	0.6x10^-23	p,π^+
Delta	Δ^+	uud	...	+1	0	0.6x10^-23	p,π^0
Delta	Δ^0	udd	...	+1	0	0.6x10^-23	n,π^0
Delta	Δ^-	ddd	...	+1	0	0.6x10^-23	n,π^-
Xi	Ξ^0	uss	1315	+1	-2	2.9x10^-10	$\Lambda^0\pi^0$
Xi	Ξ^-	dss	1321	+1	-2	1.64x10^-10	$\Lambda^0\pi^-$
Omega	Ω^-	sss	1672	+1	-3	0.82x10^-10	$\Xi^0\pi^-$, Λ^0K^-
Lambda	Λ_c^+	udc	2281	+1	0	2x10^-13	...

As an example of the notation in the column of decay modes, the sigma + decay mode is

written $p\pi^0$, $n\pi^+$, which implies there are two common decay modes,

$\Sigma^+ \rightarrow p + \pi^0$ and $\Sigma^+ \rightarrow n + \pi^+$

Particles which decay by the strong interaction typically do so on a time scale of about 10^-23 seconds, and the baryons listed in the table above have lifetimes on the order of 10^-10 seconds. The reason for those longer lifetimes is that they are forbidden by some kind of conservation law from decaying by the strong interaction, and must decay by the weak interaction. There are dozens of other baryons (i.e., combinations of three quarks), but most of them decay by the strong interaction and are so short lived that they don't leave a measurable track in a bubble chamber or other detection device. These baryons have been detected as "resonances" or peaks in the probability for particle interactions.

Baryon diagram **Baryon discussion**

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Particle concepts

Reference
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$$^{1}_{1}\mathrm{H} + {}^{1}_{1}\mathrm{H} \rightarrow {}^{2}_{1}\mathrm{D} + \mathrm{e}^{+} + \nu_{\mathrm{e}} + \gamma$$

$$^{2}_{1}\mathrm{D} + {}^{1}_{1}\mathrm{H} \rightarrow {}^{3}_{2}\mathrm{He} + \gamma$$

$$^{3}_{2}\mathrm{He} + {}^{1}_{1}\mathrm{H} \rightarrow {}^{4}_{3}\mathrm{Li} + \gamma$$

$$^{4}_{3}\mathrm{Li} \rightarrow {}^{4}_{2}\mathrm{He} + \mathrm{e}^{+} + \nu_{\mathrm{e}}$$