

## Bottom Lambda (20 Points)

### Up Quark

Electric Charge:  $+2/3$   
Spin:  $1/2$   
Mass: 2.2 MeV  
Mean Lifetime: Stable

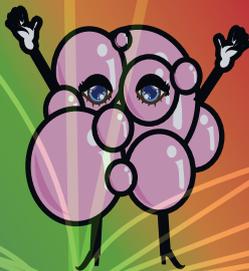
Colour Charge: Yes  
Baryon Number:  $1/3$   
1st generation (1 point)



### Bottom Quark

Electric Charge:  $-1/3$   
Spin:  $1/2$   
Mass: 4.18 GeV  
Mean Lifetime: 1.6 picoseconds

Colour Charge: Yes  
Baryon Number:  $1/3$   
3rd generation (3 points)



### Down Quark

Electric Charge:  $-1/3$   
Spin:  $1/2$   
Mass: 4.7 MeV  
Mean Lifetime: Stable

Colour Charge: Yes  
Baryon Number:  $1/3$   
1st generation (1 point)



**Electric Charge: 0**  
**Spin:  $1/2$**   
**Mass: 5619 MeV**  
**Mean Lifetime:  $1.5 \times 10^{-12}$  s**

Lambda baryons consist of one up quark, one down quark and one higher generation quark with isospin 0.

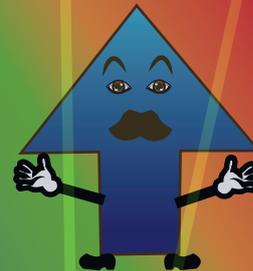
The Lambda baryon was discovered in 1950 by V. D. Hopper and S. Biswas of the University of Melbourne.

## Neutral Sigma (15 Points)

### Up Quark

Electric Charge:  $+2/3$   
Spin:  $1/2$   
Mass: 2.2 MeV  
Mean Lifetime: Stable

Colour Charge: Yes  
Baryon Number:  $1/3$   
1st generation (1 point)



### Strange Quark

Electric Charge:  $-1/3$   
Spin:  $1/2$   
Mass: 93.5 MeV  
Mean Lifetime: 10 nanoseconds

Colour Charge: Yes  
Baryon Number:  $1/3$   
2nd generation (2 points)



### Down Quark

Electric Charge:  $-1/3$   
Spin:  $1/2$   
Mass: 4.7 MeV  
Mean Lifetime: Stable

Colour Charge: Yes  
Baryon Number:  $1/3$   
1st generation (1 point)



**Electric Charge: 0**  
**Spin:  $1/2$**   
**Mass: 1192 MeV**  
**Mean Lifetime:  $7.4 \times 10^{-20}$  s**

Sigma baryons consist of two first generation quarks and one higher generation quark with isospin 1.

There are many different types of Sigma baryons with different quark compositions and spins.

# Particle Builder

Target Card

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