**Particle Physics – the Basics!**

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| Leptons | * Not made up of quarks
* Mostly ‘light’ particles (but not all)
* Do not ‘feel’ the strong interaction
* Have a lepton number, L = 1
* Antileptons have L = -1
 | Examples include:Electron, e-Muon, µ-Tau, τ-Neutrinos (e, µ and τ type)Positron, e+ (antilepton) |

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| Hadrons | * Made up of quarks
* Mostly ‘heavy’ particles (but not all)
* ‘Feel’ the strong interaction
* Of two types…….
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| Baryons* Stupid name - not named after someone called Barry!
* Consist of 3 quarks
* Have a Baryon number, B = 1
* Antibaryons have B = -1
* Examples include:

proton, neutron, Σ particles | Mesons* Consist of quark – antiquark
* Have a Baryon number, B = 0 ….

 ….because they’re not Baryons!* Examples include:

π particles (pions), Κ particles (kaons) |

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| Quarks | * Only found in Hadrons
* Can’t be separated
* Have charges of +2/3e or – 1/3e (opposite for antiquarks)
* 6 of them in total
* We only meet particles with the first 3 ….

up, down and strange ( u, d, s ) |

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| Strange Particles | * Particles with strange quarks (or antiquarks)
* Fairly obvious, really!!!
* Have quantum number strangeness, S
* This can vary between -3 and + 3 depending on number of strange quarks
* Examples include:

 Σ particles, Κ particles |

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| Gauge Bosons | * Involved in interactions
* Only exist for a very short time
* Different type for each interaction
 | Strong – GluonsElectromagnetic – PhotonsWeak – W+, W- and ZGravity - Gravitons |