**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……. | |
| 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 – Gluons  Electromagnetic – Photons  Weak – W+, W- and Z  Gravity - Gravitons |