# PDG ID Requests

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# PDG IDs

- The Particle Data Group maintains a list of unique identifiers and rules for establishing identifiers for particles
- These are meant to provide common definitions for all PDG IDs, so that other codes can understand what particle is what
- The list is updated with the review, which will be updated this fall
- We have a chance to request updates now
- There are some extensions that we've discussed requesting within ATLAS, and we'd like to know whether the community *supports* the requests, *objects to* the request, or doesn't care
  - The actual extensions are up to the reviewers. We can only make requests.
- We would plan to nudge UFO model authors afterwards to update to the standard

# Extensions

- A doubly-charged Higgs included, preferably in the high 30s
- An axion/ALP, preferably in the 50s
- A DM mediator / extra pseudo scalar a for NMSSM, 2HDM+a, etc models
- Right-handed W boson from LR symmetric models (currently 34=W’)
- An expansion to the leptoquark sector. Currently one PDG ID (42).
    - Could be programmatically generated: 4XXYYZ, where XX is the quark flavor, YY is the lepton flavor, and Z is the spin (distinguish scalar and vector). Mixing TBD.
- Heavy leptons. Currently one neutral (18) and one charged (17).
    - Would need 3 of each to cover HNL models generically.
- Vector-like quarks and leptons? Currently only 4th generation.
    - Or rule should be specified.
- Explicit mention that hidden valley covers dark sector models (incl. dark $\gamma$)
- Geant4 uses 999 for Geantino and 998 for ChargedGeantino; standardize?