Request for modification of UCD

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UCD 1.5

Q	src.orbital	Orbital parameters
P	arith.rate	Rate (per time unit)
P	stat.rms	Root mean square as square root of sum of squared values or quadratic mean

Rationale: we use to define the accuracy of the orbit of a solar system with the concept of 1-sigma ephemeris uncertainty, associated with the rate of change of the 1-sigma ephemeris uncertainty. The 1-sigma uncertainty can easily be described by ucd “stat.rms;src.orbital”. It’s not the case of the rate of change, for which we have to drop part of the concept because of the ‘P’ syntax code of both “arith.rate” and “stat.rms”.

Proposition: change the syntax code of “arith.rate” from ‘P’ to ‘Q’ to allow to express the rate of something, e.g. “stat.rms;arith.rate”.

Q	src.orbital.node	Ascending node

Rationale: the meaning of the term “node” alone is not pertinent. If this ucd defines the “Longitude of ascending node” then it should be explicitly written.

Proposition: change ucd to “src.orbital.nodeLongitude” and its definition to “Longitude of ascending node”.

Q	src.orbital.periastron	Periastron

Rationale: the word “periastron” corresponds to the periapsis of an orbit around a star. The word alone is also ambiguous: is it the periapsis distance or argument? The periapsis distance can be defined by “pos.distance;src.orbital”.

Proposition: change ucd to “src.orbital.periapsis” and its definition to “Argument of periapsis”.

Q	src.orbital.TissJ	Tisserand parameter with respect to Jupiter

Rationale: if the Tisserand parameter wrt Jupiter is defined, then the Tisserand parameter wrt other giant planets could be defined, e.g. TissS, TissU, TissN. But the concept remains the same, it is the Tisserand parameter.

Proposition: delete “src.orbital.TissJ”.

Q	pos	Position and coordinates
S	pos.heliocentric	Heliocentric position coordinate (solar system bodies)

Rationale: to define the heliocentric state vector velocity of a target, one can use the ucd “phys.veloc;pos.heliocentric”. But to define the heliocentric state vector position of a target, the single word “pos.heliocentric” can’t be used because it is defined as only secondary. So one needs to compose with another word, e.g. “pos;pos.heliocentric”. Why not, but it is redundant.

Proposition: change syntax code ‘S’ to ‘Q’. The same rationale could be applied to “pos.geocentric”, and other pos.XXXtric ucd.

S	pos.barycenter	Barycenter

Rationale: The very short definition of the UCD lets think that it defines the point corresponding to the barycenter of a system. In solar system science, it is common to refer coordinates to the barycenter of the Solar system or a planetary system. For consistency with other xxxtric definitions, the word barycentric could be used.

Proposition: change ucd to “pos.barycentric” and its definition to “Barycentric position coordinate”.

Q	stat.lyapunov	Lyapunov time or exponent

Rationale: the Lyapunov time is the characteristic timescale on which a dynamical system is chaotic. It is defined as the inverse of a system's largest Lyapunov exponent. Unit: kyr

Proposition: to not introduce a new category in UCD tree, and to limit the number of words, we propose to create a single ucd “stat.lyapunov”.

Q	src.orbital.moid	Minimum orbit intersection distance

Rationale: the Minimum orbit intersection distance (MOID) is a measure used in astronomy to assess potential close approaches and collision risks between astronomical objects. Unit: au

Proposition: create new ucd “src.orbital.moid”.

Q	phys.obliquity	Inclination of the spin axis

Rationale: No ucd allows to define the inclination of the rotation axis of a celestial body with respect to its orbital plane. Unit: degrees.

Proposition: create new ucd “phys.obliquity”.

Q	phys.thermalInertia	Thermal inertia of a body

Rationale: No ucd allows to define the thermal inertia of solar system body. In planetary science, this physical property measures the surface's ability to resist to changes of temperature. Unit: J.s^(-1/2).K^-1.m^-2

Proposition: create new ucd “phys.thermalInertia”.