Appendix A.
Reference Summary

Topic: Ignore

This appendix provides a summary of the reference items defined in the Laws Component. Just the name and a brief description of each item is given. There is a separate section for each type of item (class, function, Scheme extension, test harness command, etc.).

Classes

Topic: Ignore

base_curve_law_data . . . . . Abstract base class to access curve_law_data with or without the ACIS kernel.

base_pcurve_law_data . . . . . Abstract base class to access pcurve_law_data with or without the ACIS kernel.

base_surface_law_data . . . . . Abstract base class to access surface_law_data with or without the ACIS kernel.

base_transform_law_data . . . . . Abstract base class to access transform_law_data with or without the ACIS kernel.

base_wire_law_data . . . . . Abstract base class to access wire_law_data with or without the ACIS kernel.

bend_law . . . . . Creates a law to bend from a position around an axis in a given direction a specified amount.

binary_law . . . . . Provides methods and data for laws that have two sublaws.

composite_law . . . . . Constructs the composition of two functions.

constant_law . . . . . Creates a law that is constant.

cos_law . . . . . Provides methods and data for the cosine mathematical function.

cross_law . . . . . Provides methods for the cross product mathematical function.

curve_law . . . . . Returns the position on a curve.

dcurve_law . . . . . Returns the position or one of the derivatives on a curve.

division_law . . . . . Provides methods for the division mathematical function.

frenet_law . . . . . Creates a vector field for a given curve that points in the direction of curvature.

identity_law . . . . . Provides methods and data that return one term of the input value.

law . . . . . Creates the base class for the derived law classes.

law_data . . . . . Creates a wrapper for other ACIS classes for passing as arguments to laws.

law_law_data . . . . . Creates a wrapper around a law for passing into unary and multiple law data classes.

minus_law . . . . . Provides methods for the minus, or subtraction, mathematical function.

multiple_data_law . . . . . Provides methods and data for laws that have multiple law data members.

multiple_law . . . . . Provides methods and data for laws that have multiple sublaws.

negate_law . . . . . Provides methods for the unary minus, or negation, mathematical function.

norm_law . . . . . Provides methods for the normalize mathematical function.

path_law_data . . . . . Creates a wrapper for either a curve or wire class for input into a law.

pcurve_law . . . . . Creates a law to support parameter curve calculations.

plus_law . . . . . Provides methods for the plus, or addition, mathematical function.

sin_law . . . . . Provides methods and data for the sine mathematical function.

sqrt_law . . . . . Provides methods and data for the square root mathematical function.

surface_law . . . . . Returns the position on a surface.

surfnorm_law . . . . . Composes a law mathematic function that returns the normal to a surface at a given position.

term_law . . . . . Provides methods for the term mathematical function that returns a single dimensional element of a multidimensional function.

times_law . . . . . Provides methods for the times, or multiplication, mathematical function.

transform_law . . . . . Applies an ACIS transform to a law that returns a three dimensional position.

unary_data_law . . . . . Provides methods and data for laws that have one law data member.

unary_law . . . . . Provides methods and data for laws that have one sublaw.

vector_law . . . . . Combines one dimensional laws into a multi-dimensional law.

Functions

Topic: Ignore

initialize_law . . . . . Initializes the law library.

new_law_id . . . . . Creates a unique id number for the given law which is used for type identification.

terminate_law . . . . . Terminates the law library.

Law Symbols

Topic: Ignore

A#–Z# . . . . . Makes a law that uses the identity law to take and return the numbered *n*th input argument.

ABS . . . . . Makes a law that takes the absolute value of another law.

AND . . . . . Used with PIECEWISE to create a logical AND conditional.

ARCCOS . . . . . Makes a law that finds the arc cosine.

ARCCOSH . . . . . Makes a law that finds the inverse hyperbolic cosine.

ARCCOT . . . . . Makes a law that finds the arc cotangent.

ARCCOTH . . . . . Makes a law that finds the inverse hyperbolic cotangent.

ARCCSC . . . . . Makes a law that finds the arc cosecant.

ARCCSCH . . . . . Makes a law that finds the inverse hyperbolic cosecant.

ARCSEC . . . . . Makes a law that finds the arc secant.

ARCSECH . . . . . Makes a law that finds the inverse hyperbolic secant.

ARCSIN . . . . . Makes a law that finds the arc sine.

ARCSINH . . . . . Makes a law that finds the inverse hyperbolic sine.

ARCTAN . . . . . Makes a law that finds the arc tangent.

ARCTANH . . . . . Makes a law that finds the inverse hyperbolic tangent.

BEND . . . . . Creates a law to bend from a position around an axis in a given direction a specified amount.

BS . . . . . Gets the position of the spline approximating surface at the u,v parameters.

constant . . . . . Makes a law that is a constant number.

COS . . . . . Makes a law that finds the cosine.

COSH . . . . . Makes a law that finds the hyperbolic cosine.

COT . . . . . Makes a law that finds the cotangent.

COTH ..... Makes a law that finds the hyperbolic cotangent.

CROSS ..... Makes a law that is the cross product of two other laws.

CSC ..... Makes a law that finds the cosecant.

CSCH ..... Makes a law that finds the hyperbolic cosecant.

CUR ..... Makes a law that returns the positions of the defining curve.

CURC ..... Makes a law that returns the curvature of the curve at a parameter value.

CURVEPERP ..... Makes a law that performs the curve perpendicular operation.

D ..... Makes a law that takes one or more derivatives of a given law with respect to a given variable.

DCUR ..... Makes a law that finds the derivative of a given curve.

division ..... Makes a law that uses the division ("/") operator.

DOMAIN ..... Makes a law that returns the domain.

DOT ..... Makes a law that is the dot product of two other laws.

DPCUR ..... Makes a law that takes the derivative of a pcurve.

DSURF ..... Makes a law that finds the derivative of a given surface.

DWIRE ..... Makes a law that finds the derivative of a given wire.

E ..... Provides the representation for e to the accuracy of the system.

EDGE# ..... Makes a law with a tag for an edge or bounded curve used as an input argument.

equal . . . . . Used with PIECEWISE to create a logical = conditional.

even . . . . . Makes a law for the even test operation.

EXP . . . . . Makes a law that takes *e* to a given power.

exponent . . . . . Makes a law that uses the exponentiation, or power, ("^") operator.

FALSE . . . . . Makes a law for the constant false.

FRENET . . . . . Makes a law that returns the second geometric derivative of its sublaw.

GAUSCUR . . . . . Gets the Gaussian curvature at the u,v coordinates of the surface.

greater_than . . . . . Used with PIECEWISE to create a logical > conditional.

greater_than_or_equal . . . . . Used with PIECEWISE to create a logical >= conditional.

int . . . . . Makes a law for the integer test operation.

LAW . . . . . Represents the base LAW class from which new laws can be derived.

LAW# . . . . . Makes a law a law with a tag for a law used as an input argument.

length_param . . . . . Takes a parameter value and a distance and returns a parameter value at the location equal to the distance along the curve from the original parameter.

less_than . . . . . Used with PIECEWISE to create a logical < conditional.

less_than_or_equal . . . . . Used with PIECEWISE to create a logical <= conditional.

LN . . . . . Makes a law that takes the log base *e* (or the natural log) of the given value.

LOG . . . . . Makes a law that takes the log of a given base of the given value.

MAX ..... Makes a law that finds the maximum of two or more input laws.

MAXCUR ..... Gets the greater curvature value at the *u,v* coordinates of the surface.

MEANCUR ..... Gets the mean curvature at the *u,v* coordinates of the surface.

MIN ..... Makes a law that finds the minimum of two or more input laws.

MINCUR ..... Gets the lesser curvature value at the *u,v* coordinates of the surface.

MINROT ..... Makes a law that returns the minimum rotation.

minus ..... Makes a law that uses the minus, or subtraction ("–") operator.

multiple_curve .....

multiple_curveperp .....

negate ..... Makes a law that uses the unary minus, or negation ("–") operator.

NORM ..... Makes a law that normalizes a law.

NOT ..... Used with PIECEWISE to create a logical NOT conditional.

not_equal ..... Used with PIECEWISE to create a logical != conditional.

NULL ..... Creates a syserror.

O ..... Creates function composition, as in "f of g", where f and g are both laws.

odd ..... Makes a law for the odd test operation.

OR ..... Used with PIECEWISE to create a logical OR conditional.

PCUR ..... Makes a law for the pcurve.

PCURVE ..... Makes a law for accepting pcurves as input data.

PDOMAIN . . . . . Makes a law for the permanent domain.

PI . . . . . Provides the representation for pi to the accuracy of the system.

PIECEWISE . . . . . Permits laws to evaluate differently based on conditional definition statements.

plus . . . . . Makes a law that uses the addition (“+”) operator.

prime . . . . . Makes a law for the prime test operation.

ROTATE . . . . . Makes a law that transforms vectors.

SEC . . . . . Makes a law that finds the secant.

SECH . . . . . Makes a law that finds the hyperbolic secant.

SET . . . . . Makes a law that returns a 1 if its sublaw is positive and 0 if its sublaw is negative or zero (0).

SIN . . . . . Makes a law that finds the sine.

SINH . . . . . Makes a law that finds the hyperbolic sine.

SIZE . . . . . Returns the square root of the sum of the squares of a given vector (e.g., VEC) elements.

SQRT . . . . . Makes a law that takes the square root of a given law.

STEP . . . . . Makes a law that defines functions with disjoint intervals.

SURF . . . . . Makes a law that returns the positions of the defining surface.

SURF# . . . . . Makes a law with a tag for a surface used as an input argument.

SURFNORM . . . . . Makes a law that returns the normal to a surface at a given position.

SURFPERP . . . . . Makes a law that returns the position on a surface of point projected perpendicular to surface.

SURFVEC ..... Makes a law that returns a parameter vector on a surface.

T ..... Makes a law that uses the identity law to take and return the first input argument.

TAN ..... Makes a law that finds the tangent.

TANH ..... Makes a law that finds the hyperbolic tangent.

TERM ..... Makes a law that returns a single term from a given multi–dimensional function.

times ..... Makes a law that uses the times or multiplication (“*”) operator.

TRANS ..... Makes a law that transforms positions.

TRANS# ..... Makes a law with a tag for a transform used as an input argument.

TRUE ..... Makes a law for the constant true.

TWIST ..... Makes a law that returns a twisted vector field about a given path.

U ..... Makes a law that uses the identity law to take and return the first input argument.

UNBEND ..... Creates a law to unbend from a position around an axis in a given direction a specified amount.

V ..... Makes a law that uses the identity law to take and return the second input argument.

VEC ..... Makes a law that is a vector of arbitrary dimensions.

WIRE ..... Makes a law that returns the positions of the defining a wire.

WIRE# ..... Makes a law with a tag for a wire used as an input argument.

X ..... Makes a law that uses the identity law to take and return the first input argument.

Y ..... Makes a law that uses the identity law to take and return the second input argument.

Z . . . . . Makes a law that uses the identity law to take and return the third input argument.