Table 1: Some low-level functions of the package OREMODULES

`DefineOreAlgebra`	Set up an Ore algebra D in OREMODULES
`Involution`	Apply an involution to a matrix over D
`Factorize(Rat)`	Right-divide a matrix over D by another one
`Mult`	Multiply two or more matrices over D
`ApplyMatrix`	Apply (matrices of) operators in D to (vectors of) functions
`KroneckerProduct`	Compute the Kronecker product of two matrices

Table 2: Main functions for the treatment module theory over Ore algebras D

`TorsionElements(Rat)`	Compute the torsion left D-submodule of a finitely presented left D-module
`Exti(Rat)`	Given a finitely presented left D-module M and a positive integer i, compute the left D-module $\mathrm{ext}_D^i(M,D)_\theta$
`Extn(Rat)`	Given a finitely presented left D-module M and a positive integer m, compute the left D-modules $\mathrm{ext}_D^i(M,D)_\theta$, for $i=0,\ldots,m$
`Quotient(Rat)`	Compute the quotient module of two left D-modules generated by the rows of two matrices
`SyzygyModule(Rat)`	Compute the first syzygy module of a finitely presented left D-module M
`Resolution(Rat)`	Given a positive i integer, compute the first i^{th} terms of a free resolution of a finitely presented left D-module M
`FreeResolution(Rat)`	Compute a free resolution of a finitely presented left D-module M
`ShorterFreeResolution(Rat)`	Compute a shorter free resolution of a finitely presented left D-module M
`ShortestFreeResolution(Rat)`	Compute the shortest free resolution of a finitely presented left D-module M
`OreRank(Rat)`	Compute the rank of a finitely presented left D-module M
`ProjectiveDimension(Rat)`	Compute the left projective dimension of a finitely presented left D-module M
`HilbertSeries(Rat)`	Compute the Hilbert series of a finitely presented left D-module M
`HilbertPolynomial(Rat)`	Compute the Hilbert polynomial of a finitely presented left D-module M
`Dimension(Rat)`	Compute the index of the last non-zero Cartan character of a finitely presented left D-module M
`Complement(Rat)`	Compute the matrices $X \in D^{p \times q'}$ and $Y \in D^{q' \times p}$ satisfying the equation $R'\,X\,R' - R' = Y\,R$, where the matrices $R \in D^{q \times p}$ and $R' \in D^{q' \times p}$ are given

Table 3: Main functions for the treatment of linear systems over Ore algebras D

`Parametrization(Rat)`	Find parametrization of the system
`MinimalParametrization(s)(Rat)`	Find minimal parametrization(s) of the system
`AutonomousElements(Rat)`	Find a generating set of autonomous elements of the system (i.e., solve the system of equations for the torsion elements) in case of PDEs
`LeftInverse(Rat)`	Compute a left-inverse for a matrix over D
`LocalLeftInverse`	Given a $0 \neq \pi \in k[x_1, \dots, x_n]$, compute a left inverse for a matrix over $k[x_1, \dots, x_n, \pi^{-1}]$
`RightInverse(Rat)`	Compute a right-inverse for a matrix over D
`GeneralizedInverse(Rat)`	Compute a generalized inverse matrix over D
`Elimination`	Eliminate certain unknowns from a linear system over D
`PiPolynomial`	Given a system matrix over a commutative polynomial ring D and a variable $x_i \in D$, compute the ideal of all π-polynomials in x_i for the given system
`Connection`	Compute the matrices defining a connection for a given D-finite left D-module
`FirstIntegral`	In the case of ODEs, find first integrals of motion
`LQEquations`	Compute the Euler-Lagrange equations for a linear quadratic problem and a controllable OD system