D.4.21 primdec_lib

Library:
primdec.lib
Purpose:
Primary Decomposition and Radical of Ideals
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Overview:
Algorithms for primary decomposition based on the ideas of Gianni, Trager and Zacharias (implementation by Gerhard Pfister), respectively based on the ideas of Shimoyama and Yokoyama (implementation by Wolfram Decker and Hans Schoenemann).
The procedures are implemented to be used in characteristic 0.
They also work in positive characteristic >> 0.
In small characteristic and for algebraic extensions, primdecGTZ may not terminate.
Algorithms for the computation of the radical based on the ideas of Krick, Logar, Laplagne and Kemper (implementation by Gerhard Pfister and Santiago Laplagne).
They work in any characteristic.
Baserings must have a global ordering and no quotient ideal. Exceptions: primdecGTZ, absPrimdecGTZ, minAssGTZ, primdecSY, minAssChar, radical accept non-global ordering.

Procedures:

D.4.21.1 Ann	annihilator of R^n/M, R=basering, M in R^n
D.4.21.2 primdecGTZ	complete primary decomposition via Gianni,Trager,Zacharias
D.4.21.3 primdecGTZE	complete primary decomposition via Gianni,Trager,Zacharias. Returns empty list for the unit ideal
D.4.21.4 primdecSY	complete primary decomposition via Shimoyama-Yokoyama
D.4.21.5 primdecSYE	complete primary decomposition via Shimoyama-Yokoyama. Returns empty list for the unit ideal
D.4.21.6 minAssGTZ	the minimal associated primes via Gianni,Trager,Zacharias (with modifications by Laplagne)
D.4.21.7 minAssGTZE	the minimal associated primes via Gianni,Trager,Zacharias. Returns empty list for unit ideal
D.4.21.8 minAssChar	the minimal associated primes using characteristic sets
D.4.21.9 minAssCharE	the minimal associated primes using characteristic sets. Returns empty list for unit ideal
D.4.21.10 testPrimary	tests the result of the primary decomposition
D.4.21.11 testPrimaryE	tests the result of the primary decomposition. Handles also empty list L.
D.4.21.12 radical	computes the radical of I via Krick/Logar (with modifications by Laplagne) and Kemper

D.4.21.13 radicalEHV	computes the radical of I via Eisenbud,Huneke,Vasconcelos
D.4.21.14 equiRadical	the radical of the equidimensional part of the ideal I
D.4.21.15 prepareAss	list of radicals of the equidimensional components of I
D.4.21.16 equidim	weak equidimensional decomposition of I
D.4.21.17 equidimMax	equidimensional locus of I
D.4.21.18 equidimMaxEHV	equidimensional locus of I via Eisenbud,Huneke,Vasconcelos
D.4.21.19 zerodec	zerodimensional decomposition via Monico
D.4.21.20 absPrimdecGTZ	the absolute prime components of I
D.4.21.21 absPrimdecGTZE	the absolute prime components of I. Assumes I is not unit ideal.
D.4.21.22 sep	the separabel part of f as polynomial in Fp(t1,...,tm)