

CoCoALib - Slug #1737

Homogenization of an ideal with ZZ^1-grading

29 Apr 2023 12:50 - John Abbott

Status:	In Progress	Start date:	29 Apr 2023
Priority:	Normal	Due date:	
Assignee:	Anna Maria Bigatti	% Done:	20%
Category:	Improving	Estimated time:	0.00 hour
Target version:	CoCoALib-0.99880	Spent time:	0.60 hour
Description			
<p>(1) With a ZZ^1-grading I think it is enough to compute a "wdeg-rev" ReducedGBasis then "saturate" each element independently (cannot currently find the relevant lemma in K+R). I think that CoCoALib does not handle this case cleverly: check what the code actually does.</p> <p>(2) Moreover, do we want allow homogenization by an indet whose degree is not 1? Sometimes this is possible: e.g. $\deg(x) = 3, \deg(h) = 2$ then we can homogenize x^3+2*x to get $x^3 + 2*x*h^3$; but we cannot homogenize x^2+2*x. My current inclination is to allow homogenization by an indet whose degree is not 1. Opinions? Comments?</p>			
Related issues:			
Related to CoCoALib - Feature #1778: Homogenizer		In Progress	02 Feb 2024

History

#1 - 31 Jan 2024 22:07 - John Abbott

- Status changed from New to In Progress
- Target version changed from CoCoALib-0.99850 to CoCoALib-0.99880
- % Done changed from 0 to 10

Yes, it would be possible to implement this, and perhaps not even too hard. **But why?**
When would it be useful? Is there any point in "cluttering up" CoCoALib with code which probably no one will use?

#2 - 01 Feb 2024 10:46 - Anna Maria Bigatti

- Subject changed from Homogenization with ZZ^1-grading to Homogenization of an ideal with ZZ^1-grading
- Description updated

#3 - 01 Feb 2024 10:47 - Anna Maria Bigatti

- Description updated

#4 - 01 Feb 2024 10:48 - Anna Maria Bigatti

- Description updated

#5 - 01 Feb 2024 11:00 - Anna Maria Bigatti

- Assignee set to Anna Maria Bigatti

By Kreuzer-Robbiano: **Corollary 4.3.20**. It requires that P is positively graded.

#6 - 01 Feb 2024 11:04 - Anna Maria Bigatti

- Description updated

(2) I think we should **not** provide homogenization by an indet whose degree is not 1, because this is not entirely trivial to do, so it would take time from more important things, and I doubt it is useful to anyone.

Of course, if someone asks for it, we can reconsider.

#7 - 01 Feb 2024 12:10 - Anna Maria Bigatti

By Robbiano: No need to allow homogenization by an indet whose degree is not 1.

#8 - 01 Feb 2024 19:59 - John Abbott

- % Done changed from 10 to 20

Anna, are you willing to investigate point (1): the implementation behaving cleverly if the term order is wdeg-compatible, and the grading is strictly positive?

#9 - 02 Feb 2024 20:13 - John Abbott

- Related to Feature #1778: Homogenizer added