

Accepted Manuscript

Equations defining the multi-Rees algebras of powers of an ideal

Babak Jabarnejad

PII: S0022-4049(17)30189-5
DOI: <http://dx.doi.org/10.1016/j.jpaa.2017.08.013>
Reference: JPAA 5736

To appear in: *Journal of Pure and Applied Algebra*

Received date: 7 November 2016

Revised date: 10 July 2017

Please cite this article in press as: B. Jabarnejad, Equations defining the multi-Rees algebras of powers of an ideal, *J. Pure Appl. Algebra* (2017), <http://dx.doi.org/10.1016/j.jpaa.2017.08.013>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Equations defining the multi-Rees algebras of powers of an ideal

Babak Jabbarnejad

Department of Mathematical sciences, University of Arkansas, Fayetteville, Arkansas, 72701, USA

Abstract

In this paper we describe the defining equations of the multi-Rees algebra $R[\{I^{n_i}t_i\}_{1 \leq i \leq r}]$ over a Noetherian ring R when I is an ideal of linear type. This generalizes a result of Ribbe and recent work of Lin-Polini and Sosa.

Keywords: Rees Algebra, Veronese Subring, Linear Type
2000 MSC: 13A30

1. Introduction

Let R be a Noetherian ring and $I \subseteq R$ be an ideal of R . An important problem in the theory of Rees rings is to describe $R[It]$ in terms of generators and relations: find an ideal \mathcal{L} in a polynomial ring $S = R[T_1, \dots, T_n]$ such that $R[It] \cong S/\mathcal{L}$. Generators of the ideal \mathcal{L} are called equations of the Rees algebra. More generally, one would like to describe equations of the multi-Rees algebra $R[I_1t_1, I_2t_2, \dots, I_rt_r]$. Ribbe [1] describes equations of the multi-Rees algebra $R[It_1, It_2, \dots, It_r]$ when I is of linear type and he also determines the relation type of the multi-Rees algebra $R[I^{n_1}t_1, \dots, I^{n_r}t_r]$ when $n_i \geq 2$. Also, Johnson and McLoud-Mann [2] determine the defining equations of the Rees algebra $R[I^n t]$ when I is of linear type. In the work of Lin and Polini [3] these equations are described for $R[I^{n_1}t_1, \dots, I^{n_r}t_r]$, when $R = k[x_1, \dots, x_n]$ (k a field) and $I = \langle x_1, \dots, x_n \rangle$. Sosa [4] describes the equations of the multi-Rees algebras $R[I_1t_1, I_2t_2, \dots, I_rt_r]$ when R is a polynomial ring over a field and I_i are monomial ideals with some special properties.

Email address: babak.jab@gmail.com (Babak Jabbarnejad)

Download English Version:

<https://daneshyari.com/en/article/8897568>

Download Persian Version:

<https://daneshyari.com/article/8897568>

[Daneshyari.com](https://daneshyari.com)