HYPERSURFACES OF LOW DEGREE

JOE HARRIS, BARRY MAZUR, AND RAHUL PANDHARIPANDE

CONTENTS

1.	Introduction	
	1.1. Statement of results	. 125
	1.2. Further questions	. 127
2.	Structure of the proof	. 128
	2.1. The case of cubics	. 128
	2.2. The case of quartics; Fano correspondences	. 130
	2.3. Examples of Fano correspondences	. 131
	2.4. Outline of the argument in the general case	. 134
3.	Families of hypersurfaces and Fano varieties	. 135
	3.1. Numbers	. 135
	3.2. Families of hypersurfaces, and combs	. 136
	3.3. The Fano variety of k-planes on a hypersurface	. 139
	3.4. The residual scheme attached to a family of <i>l</i> -planed hypersurfaces	. 141
	3.5. Explicit equations	. 142
	3.6. Linear series	144
	3.7. The linear series attached to a family of <i>l</i> -planed hypersurfaces	145
	3.8. The residual family of $(k-1)$ -planed hypersurfaces attached to a	
	family of <i>l</i> -planed hypersurfaces	. 146
4.	Proofs of the main theorems and further applications	. 148
	4.1. A Bertini lemma	148
	4.2. Proof of Theorem 3.10	149
	4.3. Consequences	153
	4.4. The inductive step in the proof of Theorem 3.5	154
	4.5. Proof of Theorem 3.5	155
	4.6. The parametrizing variety	156
5.	Plane sections of hypersurfaces	157

1. Introduction

1.1. Statement of results. Let K be an algebraically closed field of characteristic 0. This paper is concerned with several aspects of the geometry of smooth hypersurfaces $X \subset \mathbb{P}^n_K$ over K whose dimensions are much larger than their degree (or, more generally, any hypersurface such that the codimension of the

Received 11 December 1995. Revision received 21 February 1997. 1991 Mathematics Subject Classification. 14J70, 14M20.