

# 研究セミナー

勉強会を企画しました。興味をお持ちの方は、ご参加ください。

日時：2016年2月 9日 (火) 16:00 – 17:30

2月10日 (水) 14:00 – 15:30

場所：神戸大学理学研究科 B 棟 B314

**2月9日(火) 16:00～17:30**

**講演題目：Introduction to canonical 3-folds**

**講演者：Stephen Coughlan 氏**

**(Leipniz Universität Hannover)**

**2月10日(水)14:00～15:30**

**講演題目：On some recent developments  
on rationality problems**

**講演者：Luca Tasin 氏**

**(Universität Bonn)**

連絡先：佐野 太郎 (tarosano@math.kobe-u.ac.jp)



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**Tom Ducat 氏 (京都大学数理解析研究所)**

**「Divisorial extractions from singular curves in a smooth 3-fold」**

**Abstract :**

Many of the details of the MMP have been worked out explicitly for the Mori category of terminal 3-folds. For example there is a classification of 3-fold terminal singularities by Mori and Reid, there is a classification of divisorial contractions which contract a divisor to a point and much is also known about flips. We will consider divisorial extractions which extract a divisor from a singular curve  $C$  contained in a smooth 3-fold  $X$ .

As a consequence of Reid's general elephant conjecture, there should be an anticanonical section  $S \in |-K_X|$  containing  $C$  which has at worst a Du Val singularity. The classification of such extractions can then be studied in cases according to the  $A$ ,  $D$  and  $E$  types that describe the Du Val singularities.

In this setting, calculating the equations of a Mori extraction is equivalent to writing down a presentation of the symbolic power algebra of the ideal of the curve. This is a Gorenstein ring and there is a very natural way of constructing it by using serial Kustin–Miller unprojection—a technique for constructing Gorenstein rings in high codimension developed by Papadakis and Reid.

Like the analogous story with Mori flips, if  $S$  has a type  $D$  or  $E$  Du Val singularity then the existence of terminal extractions turn out to be very restricted. However the type  $A$  case is much more complicated and contains infinitely many families with examples living in arbitrarily large codimension. These type  $A$  constructions yield a class of affine Gorenstein varieties which are very similar to Brown and Reid's 'diptych varieties'.

連絡先：佐野 太郎 (tarosano@math.kobe-u.ac.jp)