

OpenGeoProver Output for conjecture “geothm_zadatak”

Wu’s method used

October 1, 2016

1 Invoking the theorem prover

The used proving method is Wu’s method.

The input system is:

$$\begin{aligned} p_1 &= 2x_1 - \\ p_2 &= 2x_2 - \\ p_3 &= 2x_3 - \\ p_4 &= 2x_4 - \\ p_5 &= 2x_5 - \\ p_6 &= 2x_6 - \\ p_7 &= x_7 + x_6x_2 + x_5x_4 - x_4x_2 \\ p_8 &= x_8 + x_6x_3 - x_6x_1 + x_4x_1 \\ p_9 &= x_9 - x_5x_3 + x_5x_1 + x_3x_2 \\ p_{10} &= x_{10} + x_8x_2 + x_7x_1 \\ p_{11} &= x_{11} + 1 \\ p_{12} &= x_{12} + 1 \\ p_{13} &= x_{13} + 1 \end{aligned}$$

1.1 Triangulation, step 1

Choosing variable: Trying the variable with index 13.

Variable x_{13} selected: The number of polynomials with this variable, with indexes from 1 to 13, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{13} . No reduction needed.

The triangular system has not been changed.

1.2 Triangulation, step 2

Choosing variable: Trying the variable with index 12.

Variable x_{12} selected: The number of polynomials with this variable, with indexes from 1 to 12, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{12} . No reduction needed.

The triangular system has not been changed.

1.3 Triangulation, step 3

Choosing variable: Trying the variable with index 11.

Variable x_{11} selected: The number of polynomials with this variable, with indexes from 1 to 11, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{11} . No reduction needed.

The triangular system has not been changed.

1.4 Triangulation, step 4

Choosing variable: Trying the variable with index 10.

Variable x_{10} selected: The number of polynomials with this variable, with indexes from 1 to 10, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_{10} . No reduction needed.

The triangular system has not been changed.

1.5 Triangulation, step 5

Choosing variable: Trying the variable with index 9.

Variable x_9 selected: The number of polynomials with this variable, with indexes from 1 to 9, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_9 . No reduction needed.

The triangular system has not been changed.

1.6 Triangulation, step 6

Choosing variable: Trying the variable with index 8.

Variable x_8 selected: The number of polynomials with this variable, with indexes from 1 to 8, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_8 . No reduction needed.

The triangular system has not been changed.

1.7 Triangulation, step 7

Choosing variable: Trying the variable with index 7.

Variable x_7 selected: The number of polynomials with this variable, with indexes from 1 to 7, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_7 . No reduction needed.

The triangular system has not been changed.

1.8 Triangulation, step 8

Choosing variable: Trying the variable with index 6.

Variable x_6 selected: The number of polynomials with this variable, with indexes from 1 to 6, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_6 . No reduction needed.

The triangular system has not been changed.

1.9 Triangulation, step 9

Choosing variable: Trying the variable with index 5.

Variable x_5 selected: The number of polynomials with this variable, with indexes from 1 to 5, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_5 . No reduction needed.

The triangular system has not been changed.

1.10 Triangulation, step 10

Choosing variable: Trying the variable with index 4.

Variable x_4 selected: The number of polynomials with this variable, with indexes from 1 to 4, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_4 . No reduction needed.

The triangular system has not been changed.

1.11 Triangulation, step 11

Choosing variable: Trying the variable with index 3.

Variable x_3 selected: The number of polynomials with this variable, with indexes from 1 to 3, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_3 . No reduction needed.

The triangular system has not been changed.

1.12 Triangulation, step 12

Choosing variable: Trying the variable with index 2.

Variable x_2 selected: The number of polynomials with this variable, with indexes from 1 to 2, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_2 . No reduction needed.

The triangular system has not been changed.

1.13 Triangulation, step 13

Choosing variable: Trying the variable with index 1.

Variable x_1 selected: The number of polynomials with this variable, with indexes from 1 to 1, is 1.

Single polynomial with chosen variable: Chosen polynomial is p_1 . No reduction needed.

The triangular system has not been changed.

The triangular system is:

$$\begin{aligned} p_1 &= 2x_1 - \\ p_2 &= 2x_2 - \\ p_3 &= 2x_3 - \\ p_4 &= 2x_4 - \\ p_5 &= 2x_5 - \\ p_6 &= 2x_6 - \\ p_7 &= x_7 + x_6x_2 + x_5x_4 - x_4x_2 \\ p_8 &= x_8 + x_6x_3 - x_6x_1 + x_4x_1 \\ p_9 &= x_9 - x_5x_3 + x_5x_1 + x_3x_2 \\ p_{10} &= x_{10} + x_8x_2 + x_7x_1 \\ p_{11} &= x_{11} + 1 \\ p_{12} &= x_{12} + 1 \\ p_{13} &= x_{13} + 1 \end{aligned}$$

2 Final Remainder

2.1 Final remainder for conjecture `geothm_zadatak`

Calculating final remainder of the conclusion:

$$g = x_{12}x_7 - x_{11}x_8$$

with respect to the triangular system.

1. Pseudo remainder with p_{13} over variable x_{13} :

$$g = x_{12}x_7 - x_{11}x_8$$

2. Pseudo remainder with p_{12} over variable x_{12} :

$$g = -x_{11}x_8 - x_7$$

3. Pseudo remainder with p_{11} over variable x_{11} :

$$g = x_8 - x_7$$

4. Pseudo remainder with p_{10} over variable x_{10} :

$$g = x_8 - x_7$$

5. Pseudo remainder with p_9 over variable x_9 :

$$g = x_8 - x_7$$

6. Pseudo remainder with p_8 over variable x_8 :

$$g = -x_7 - x_6x_3 + x_6x_1 - x_4x_1$$

7. Pseudo remainder with p_7 over variable x_7 :

$$g = -x_6x_3 + x_6x_2 + x_6x_1 + x_5x_4 - x_4x_2 - x_4x_1$$

8. Pseudo remainder with p_6 over variable x_6 :

$$g = 2x_5x_4 - 2x_4x_2 - 2x_4x_1 - x_3 + x_2 + x_1$$

9. Pseudo remainder with p_5 over variable x_5 :

$$g = -4x_4x_2 - 4x_4x_1 + 2x_4 - 2x_3 + 2x_2 + 2x_1$$

10. Pseudo remainder with p_4 over variable x_4 :

$$g = -4x_3 + 2$$

11. Pseudo remainder with p_3 over variable x_3 :

$$g = 0$$

12. Pseudo remainder with p_2 over variable x_2 :

$$g = 0$$

13. Pseudo remainder with p_1 over variable x_1 :

$$g = 0$$

3 Prover results

Status: Theorem has been proved.

Space Complexity: The biggest polynomial obtained during prover execution contains 6 terms.

Time Complexity: Time spent by the prover is 0.053 seconds.

4 NDG Conditions

NDG Conditions in readable form

- There are no NDG conditions for this theorem