LATEX TEMPLATE FOR GITHUB

PETRO KOLOSOV

ABSTRACT. Your abstract here.

CONTENTS

1. INTRODUCTION

Your introduction here. Include some references [1, 2, 3]. Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

Figure example

Date: April 17, 2025.

2010 *Mathematics Subject Classification.* 26E70, 05A30.

Key words and phrases. Binomial theorem, Binomial coefficients, Faulhaber's formula, Polynomials, Pascal's triangle Finite differences, Interpolation, Polynomial identities .

Sources: https://github.com/kolosovpetro/github-latex-template

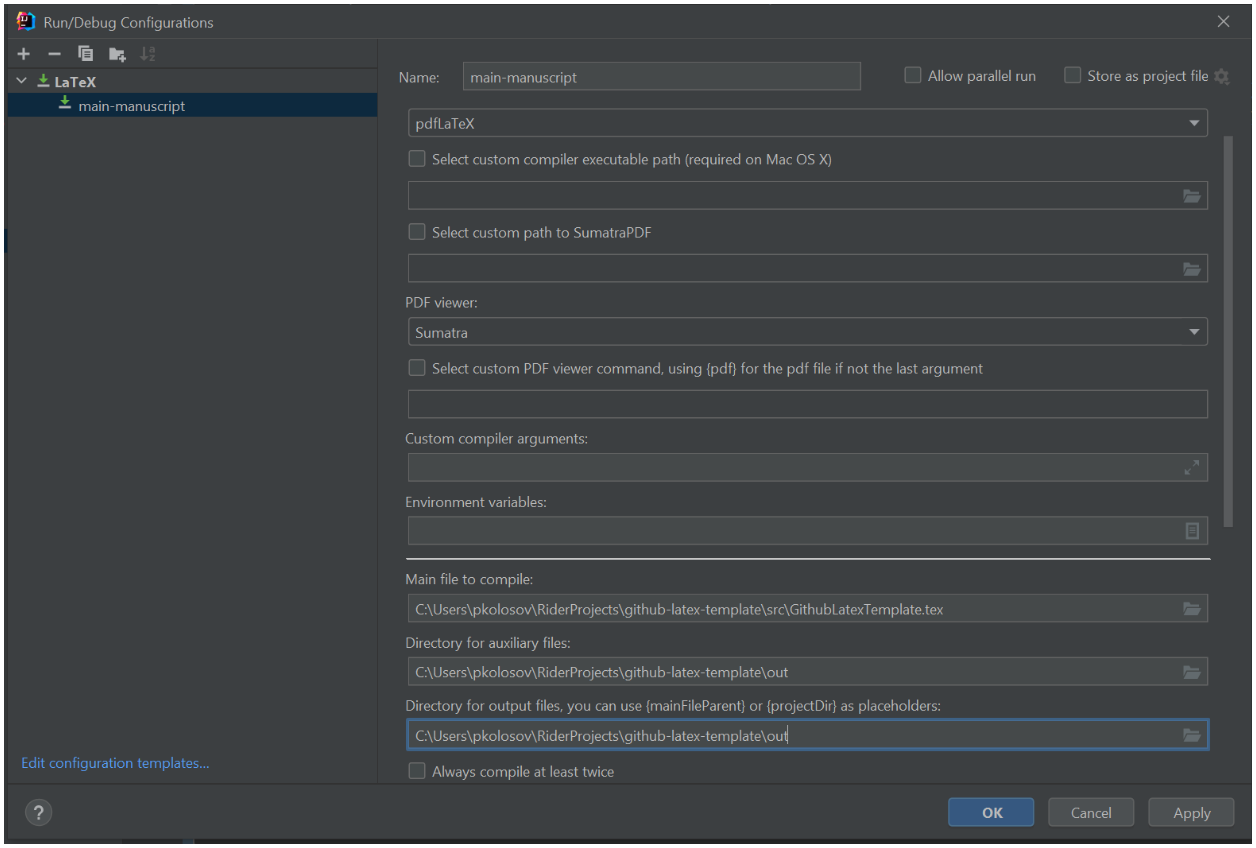

Figure 1. Figure example.

m/r	0	1	2	3	4	5	6	7
0	1							
1	1	6						
2	1	0	30					
3	1	-14	0	140				
4	1	-120	0	0	630			
5	1	-1386	660	0	0	2772		
6	1	-21840	18018	0	0	0	12012	
7	1	-450054	491400	-60060	0	0	0	51480

Table 1. Coefficients $\mathbf{A}_{m,r}$. See OEIS sequences [4, 5].

$$\left[\!\!\left[{a \atop b} \right]\!\!\right]_m$$

$$\left\llbracket \begin{matrix} a \\ b \end{matrix} \right\rrbracket_m$$

And for any natural m we have polynomial identity

$$x^m = \sum_{k=1}^{m} T(m,k) x^{[k]} \tag{1.1}$$

where $x^{[k]}$ denotes central factorial defined by

$$x^{[n]} = x \left(x + \frac{n}{2} - 1\right)^{\underline{n-1}}$$

where $(n)^{\underline{k}} = n(n-1)(n-2)\cdots(n-k+1)$ denotes falling factorial in Knuth's notation. In particular,

$$x^{[n]} = x \left(x + \frac{n}{2} - 1\right)\left(x + \frac{n}{2} - 1\right)\cdots\left(x + \frac{n}{2} - n - 1\right) = x \prod_{k=1}^{n-1} \left(x + \frac{n}{2} - k\right)$$

2. Conclusions

Conclusions of your manuscript.

References

[1] Petro Kolosov. Finding the derivative of polynomials via double limit. *GitHub*, 2024. https://kolosovpetro.github.io/pdf/FindingTheDerivativeOfPolynomialsViaDoubleLimit.pdf.

[2] Alekseyev, Max. MathOverflow answer 297916/113033, 2018. https://mathoverflow.net/a/297916/113033.

[3] Petro Kolosov. The coefficients U(m, l, k), m = 3 defined by the polynomial identity, 2018. https://oeis.org/A316387.

[4] Petro Kolosov. Entry A302971 in The On-Line Encyclopedia of Integer Sequences, 2018. https://oeis.org/A302971.

[5] Petro Kolosov. Entry A304042 in The On-Line Encyclopedia of Integer Sequences, 2018. https://oeis.org/A304042.

Version: `Local-0.1.0`

Software Developer, DevOps Engineer

Email address: kolosovp94@gmail.com

URL: https://kolosovpetro.github.io