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3.3.1: Research papers published by the teachers in the Journals notified on UGC care list during 2022.

SL No.	Title of paper	Name of the authors	Department of the teacher	Name of the journal	Year of Publication	ISSN number	Link to website of the Journal	Link to article / paper / abstract of the article	Is it listed in UGC Care list/Scopus/Web of Science/other, mention
1	Results on vanishing coefficients in infinite q-series expansions for certain arithmetic progressions mod 7	Mandeep Kaur and Vandna	Mathematics	The Ramanujan Journal	2022	Electronic ISSN : 1572-9303 Print ISSN : 1382-4090	https://www.springer.com/journal/11139	https://link.springer.com/article/10.1007/s11139-021-00430-x	Scopus, Web of Science
2	Vanishing Coefficients of q^{5n+r} and q^{11n+r} in Certain Infinite q-Product Expansions	Vandna and Mandeep Kaur	Mathematics	Annals of Combinatorics	2022	Electronic ISSN :0279-3094 Print ISSN : 0218 - 0006	https://www.springer.com/journal/26	https://link.springer.com/article/10.1007/s00026-021-00560-5	Scopus, Web of Science
3	CONGRUENCES FOR k-REGULAR PARTITIONS WITH DESIGNATED SUMMANDS	**Mandeep Kaur** and Vandna	Mathematics	JP Journal of Algebra, Number Theory and Applications	2022	P-ISSN: 0972-5555	http://www.pphmj.com/journals/jpanta.htm	http://www.pphmj.com/abstract/14274.htm	ESCI
4	Some new results on the number of tagged parts over the partitions with designated summands	Vandna and **Mandeep Kaur**	Mathematics	Journal of Ramanujan Mathematical Society	2022	2320-3110 (online)	http://jrms.ramanujanmathsociety.org/		Scopus, Web of Science

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	in which all parts are odd								
5	Dark sector assisted low scale leptogenesis from three body decay	Debasish Borah, Arnab Dasgupta and **Devabrat Mahanta**	Physics	Physical Review D	2022	ISSN: 2470-0010	https://journals.aps.org/prd/	https://journals.aps.org/prd/abstract/10.1103/PhysRevD.105.015015	Scopus, Web of Science
6	Low scale Dirac leptogenesis and dark matter with observable ΔN_ eff	**Devabrat Mahanta**, Debasish Borah	Physics	European Physics Journal C	2022	Electronic ISSN : 1434-6052	https://www.springer.com/journal/10052	https://arxiv.org/abs/2101.02092	Scopus, Web of Science
7	Low-Scale Leptogenesis From Three-Body Decay	**Devabrat Mahanta**, Debasish Borah and Arnab Dasgupta	Physics	Springer Proceeding in Physics	2022	Electronic ISSN 1867-4941 Print ISSN 0930-8989	https://www.springer.com/series/361	https://link.springer.com/chapter/10.1007/978-981-19-2354-8_117	Scopus
8	Gold Nanoparticle-Crystalline rubrene hybrid nanocomposite via plasma processing and realization of Plasmon-enhanced organic thin film	Sweety Biswasi , **Deepshikha Gogoi** , Arup R. Pal	Physics	Applied Surface Science	2022	ISSN : 0169-4332	https://www.sciencedirect.com/journal/applied-surface-science	https://www.sciencedirect.com/science/article/abs/pii/S016943322201426X	Scopus, Web of Science

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	transistor with high responsivity								
9	Open Global forest management data for 2015 at a 100 m resolution	Myroslava Lesiv et al.	Geography	Scientific data	2022	ISSN 2052-4463 (online)	https://www.nature.com/sdata/	https://www.nature.com/articles/s41597-022-01332-3	Scopus, Web of Science

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Published: 10 June 2021

Results on vanishing coefficients in infinite q-series expansions for certain arithmetic progressions mod 7

Mandeep Kaur & Vandna

The Ramanujan Journal **58**, 269–289 (2022) | Cite this article

Abstract

Recently, Mc Laughlin proved some results on vanishing coefficients in the series expansions of certain infinite q-products for arithmetic progressions modulo 5, modulo 7 and modulo 11 by grouping the results into several families. In this paper, we prove some new results on vanishing coefficients for arithmetic progressions modulo 7, which are not listed by Mc Laughlin. For example, we prove that if $t \in \{1, 2, 3\}$ and the sequence $\{A_n\}$ is defined by

Mandeep Kaur & Vandna

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360 Accesses | **2** Citations | Metrics

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Published: 02 December 2021

Vanishing Coefficients of q^{5n+r} and q^{11n+r} in Certain Infinite q-Product Expansions

Vandna & Mandeep Kaur

Annals of Combinatorics **26**, 533–557 (2022) | Cite this article

Abstract

Recently, Mc Laughlin proved several new results on vanishing coefficients in certain q-product expansions by classifying the results into various families. Also, Mc Laughlin stated some families of results with negative signs for arithmetic progressions modulo 5, modulo 7 and modulo 11. We have already proved the families of results modulo 7. In this paper, we prove results for arithmetic progressions modulo 5 and 11. For instance, we prove that if $t \in \{1, 2, 3, 4\}$ and the sequence $\{A(n)\}$ is defined by

$$\sum_{n=0}^{\infty} A(n)q^n := \left(-q^{2t}, -q^{5-2t}; q^5\right)_\infty^3 \left(q^{5-t}, q^{5+t}; q^{10}\right)_\infty,$$

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Vandna & Mandeep Kaur

Annals of Combinatorics **26**, 533–557 (2022) | Cite this article

264 Accesses | **1** Citations | Metrics

Abstract

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JP Journal of Algebra, Number Theory and Applications

JP Journal of Algebra, Number Theory and Applications
Volume 53, Issue 2, Pages 175 - 194 (February 2022)
http://dx.doi.org/10.17654/0972555522011

CONGRUENCES FOR k-REGULAR PARTITIONS WITH DESIGNATED SUMMANDS

Mandeep Kaur and Vandna

Abstract:

Let $PD_k(n)$ denote the number of k-regular partitions of n with designated summands. In this paper, we establish several new families of congruences modulo 4, 8 and 12 for $PD_k(n)$ for various values of k.

Keywords and phrases:

designated summands, regular partition, congruences.

Received: November 23, 2021; **Revised:** February 7, 2022; **Accepted:** February 15, 2022; **Published:** February 26, 2022

How to cite this article: Mandeep Kaur and Vandna, Congruences for k-regular partitions with designated summands, JP Journal of Algebra, Number Theory and Applications 53(2) (2022), 175-194. DOI: 10.17654/0972555522011

References:

[1] G. E. Andrews, R. P. Lewis and J. Lovejoy, Partitions with designated summands, Acta. Arith. 105 (2002), 51-66.

[2] N. D. Baruah and M. Kaur, A note on some recent results of da Silva and Sellers on congruences for k-regular partitions with designated summands, Integers 20 (2020), # A74.

[3] N. D. Baruah and M. Kaur, New congruences modulo 2, 4, and 8 for the number of tagged parts over the partitions with designated summands, Ramanujan J. 52 (2020), 253-274.

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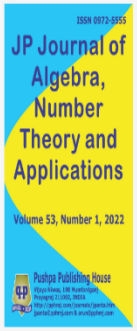

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J. Ramanujan Math. Soc. **37,** No.4 (2022) 419–435

Some new results on the number of tagged parts over the partitions with designated summands in which all parts are odd

Vandna and Mandeep Kaur

Department of Mathematics, Lovely Professional University, Phagwara 144 411, Punjab, India.
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Communicated by: Prof. Atul Dixit

Received: August 12, 2021

Abstract. Let $\mathrm{PDO}_{\mathrm{t}}(n)$ count the number of tagged parts over the partition function $\mathrm{PDO}(n)$, the number of partitions of n with designated summands in which all parts are odd. In this paper, we obtain some new generating functions concerning $\mathrm{PDO}_{\mathrm{t}}(n)$. Also, we establish several new congruences and infinite families of congruences modulo 16, 48, 144, 288, 1152 and 6912 satisfied by $\mathrm{PDO}_{\mathrm{t}}(n)$.

2000 Mathematics Subject Classification: Primary 11P83; Secondary 05A17.

1. Introduction

Andrews et al. [2] introduced the concept of partitions with designated summands. Partitions with designated summands are constructed by taking ordinary partitions and designating exactly one of each part size. The number of partitions of n with designated summands is denoted by $\mathrm{PD}(n)$. In [2], Andrews et al. also introduced $\mathrm{PDO}(n)$, the number of partitions of n with designated summands in which all parts are odd. For example, $\mathrm{PD}(6) = 28$ and $\mathrm{PDO}(6) = 12$ as there are 28 partitions of 6 with designated summands, namely,

$$6', \quad 5'+1', \quad 4'+2', \quad 4'+1'+1, \quad 4'+1+1', \quad 3'+3, \quad 3+3', \quad 3'+2'+1', \quad 3'+1'+1+1,$$
$$3'+1+1'+1, \quad 3'+1+1+1', \quad 2'+2+2, \quad 2+2'+2, \quad 2+2+2', \quad 2'+2+1'+1,$$
$$2+2'+1'+1, \quad 2'+2+1+1', \quad 2+2'+1+1', \quad 2'+1'+1+1+1, \quad 2'+1+1'+1+1,$$
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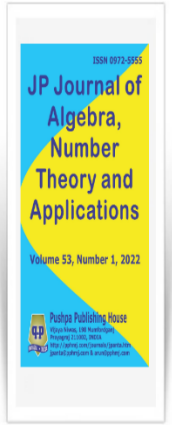

LATEST ISSUE

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High Energy Physics - Phenomenology

[Submitted on 6 Jan 2021 (v1), last revised 18 May 2022 (this version, v2)]

Low scale Dirac leptogenesis and dark matter with observable $\Delta N_{\rm eff}$

Devabrat Mahanta, Debasish Borah

We propose a gauged $B-L$ extension of the standard model (SM) where light neutrinos are of Dirac type by virtue of tiny Yukawa couplings with the SM Higgs. To achieve leptogenesis, we include additional heavy Majorana fermions without introducing any $B-L$ violation by two units. An additional scalar doublet with appropriate $B-L$ charge can allow heavy fermion coupling with the SM leptons so that out of equilibrium decay of the former can lead to generation of lepton asymmetry. Due to the $B-L$ gauge interactions of the decaying fermion, the criteria of successful Dirac leptogenesis can also constrain the gauge sector couplings so as to keep the corresponding washout processes under control. The same $B-L$ gauge sector parameter space can also be constrained from dark matter requirements if the latter is assumed to be a SM singlet particle with non-zero $B-L$ charge. The same $B-L$ gauge interactions also lead to additional thermalised relativistic degrees of freedom $\Delta N_{\rm eff}$ from light Dirac neutrinos which are tightly constrained by Planck 2018 data. While there exists parameter space from the criteria of successful low scale Dirac leptogenesis, dark matter and $\Delta N_{\rm eff}$ even after incorporating the latest collider bounds, all the currently allowed parameters can be probed by future measurements of $\Delta N_{\rm eff}$.

Comments: 39 pages, 10 figures, Version that matches the one accepted in EPJC
Subjects: **High Energy Physics - Phenomenology (hep-ph)**; Cosmology and Nongalactic Astrophysics (astro-ph.CO)
Cite as: arXiv:2101.02092 **[hep-ph]**
(or arXiv:2101.02092v2 **[hep-ph]** for this version)
https://doi.org/10.48550/arXiv.2101.02092
Related DOI: https://doi.org/10.1140/epjc/s10052-022-10443-5

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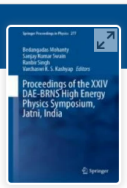

Proceedings of the XXIV DAE-BRNS High Energy Physics Symposium, Jatni, India pp 645–648 | Cite as

Low-Scale Leptogenesis From Three-Body Decay

Devabrat Mahanta, Debasish Borah & Arnab Dasgupta

Conference paper | First Online: 06 October 2022

Part of the Springer Proceedings in Physics book series (SPPHY,volume 277)

Abstract

We study the possibility of leptogenesis at tree level from a three-body decay along with dark matter and neutrino mass. We propose a first-of-its-kind model where we can have successful leptogenesis from the interference of multiple $1 \longrightarrow 3$ diagrams. We show that successful leptogenesis can occur at a scale as low as approximately 500 GeV. Also it can have rich dark matter (DM) phenomenology.

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Devabrat Mahanta, Debasish Borah & Arnab Dasgupta

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Applied Surface Science
Volume 599, 15 October 2022, 153883

Full Length Article

Gold Nanoparticle-Crystalline rubrene hybrid nanocomposite via plasma processing and realization of Plasmon-enhanced organic thin film transistor with high responsivity

Sweety Biswasi, Deepshikha Gogoi, Arup R. Pal

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https://doi.org/10.1016/j.apsusc.2022.153883

Data Descriptor | Open Access | Published: 10 May 2022

Global forest management data for 2015 at a 100 m resolution

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Mukhortova, Carlo
Alexander Pietsch,
Flavius Sorin Sirbu,
Roman Vasylyshyn
Kusumbor Bordolo
Saikia, Žiga Malek, Kuleswar Singha, Roman Feshchenko, Reinhard Prestele, Ibrar ul Hassan Akhtar, Kiran Sharma, Galyna Domashovets, Seth A. Spawn-Lee, Oleksii Blyshchyk, Oleksandr Slyva, Mariia Ilkiv, Oleksandr Melnyk, Vitalii Sliusarchuk, Anatolii Karpuk, Andrii Terentiev, Valentin Bilous, Kateryna Blyshchyk, Maxim Bilous, Nataliia Bogovyk, Ivan Blyshchyk, Sergey Bartalev, Mikhail Yatskov, Bruno Smets, Piero Visconti, Ian Mccallum, Michael Obersteiner & Steffen Fritz — Show fewer authors

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Abstract

Data Descriptor | Open Access | Published: 10 May 2022

Global forest management data for 2015 at a 100 m resolution

Myroslava Lesiv, Dmitry Schepaschenko, Marcel Buchhorn, Linda See, Martina Dürauer, Ivelina Georgieva, Martin Jung, Florian Hofhansl, Katharina Schulze, Andrii Bilous, Volodymyr Blyshchyk, Liudmila Mukhortova, Carlos Luis Muñoz Brenes, Leonid Krivobokov, Stephan Ntie, Khongor Tsogt, Stephan Alexander Pietsch, Elena Tikhonova, Moonil Kim, Fulvio Di Fulvio, Yuan-Fong Su, Roma Zadorozhniuk, Flavius Sorin Sirbu, Kripal Panging, Svitlana Bilous, Sergii B. Kovalevskii, Florian Kraxner, Ahmed Harb Rabia, Roman Vasylyshyn, Rekib Ahmed, Petro Diachuk, Serhii S. Kovalevskyi, Khangsembou Bungnamei, Kusumbor Bordoloi, Andrii Churilov, Olesia Vasylyshyn, Dhrubajyoti Sahariah, Anatolii P. Tertyshnyi, Anup Saikia, Žiga Malek, Kuleswar Singha, Roman Feshchenko, Reinhard Prestele, Ibrar ul Hassan Akhtar, Kiran Sharma, Galyna Domashovets, Seth A. Spawn-Lee, Oleksii Blyshchyk, Oleksandr Slyva, Mariia Ilkiv, Oleksandr Melnyk, Vitalii Sliusarchuk, Anatolii Karpuk, Andrii Terentiev, Valentin Bilous, Kateryna Blyshchyk, Maxim Bilous, Nataliia Bogovyk, Ivan Blyshchyk, Sergey Bartalev, Mikhail Yatskov, Bruno Smets, Piero Visconti, Ian Mccallum, Michael Obersteiner & Steffen Fritz — Show fewer authors

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