

Research Scholars Details



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Details of Funding agency/scheme	DST-INSPIRE (SRF)
Title of the research Topic	EXPONENTIAL DIOPHANTINE EQUATIONS INVOLVING LINEAR RECURRENT SEQUENCES
Abstract of research work (Max. 300 words)	The main aim of this research work is to find solutions to some exponential Diophantine equations, in particular, Diophantine equations that are related to linear recurrent sequences. We will solve some exponential Diophantine equations related to powers of consecutive Fibonacci, Pell, or balancing numbers. We also investigate some exponential Diophantine equations involving repdigits in linear recurrent sequences.
Progress of the research work	Various Diophantine problems are investigated and new results are found. Firstly, we studied problems involving members of the recurrent sequences being repdigits. We found Perrin numbers and Narayana's cows numbers which can be expressed as sums of two base b repdigits. Repdigits which are written as a difference of two Fibonacci numbers or Lucas numbers are also found out. Further, Padovan numbers which are concatenations of three repdigits and Narayana's numbers which are

	<p>concatenations of two base b repdigits are studied. We examined a Diophantine equation relating to sums of Fibonacci numbers and powers of two. A similar type of equation involving Narayana's cows numbers is also investigated. The intersection of x- coordinate of Pell equation and Narayana's cows numbers are studied. Fermat numbers in Narayana's cows sequence are found.</p>
Journal Publication	<ol style="list-style-type: none"> 1. K. Bhoi and P. K. Ray, <i>Perrin numbers expressible as sums of two base b repdigits</i>, Rend. Istit. Mat. Univ. Trieste, 53, Art. No. 18, pp. 1-11 (2021). 2. K. Bhoi and P. K. Ray, <i>Repdigits as difference of two Fibonacci or Lucas numbers</i>, Matematychni Studii., 56(2), pp. 124-132 (2021). 3. K. Bhoi and P. K. Ray, <i>Fermat numbers in Narayana's cows sequence</i>, Integers, #A16, 1-7, (2022). 4. P. K. Ray and K. Bhoi, <i>On the Diophantine equation $N_n = x^a \pm x^b + 1$</i>, Fibonacci Quartly, 60, 316-323, (2022). 5. K. Bhoi, B. K. Patel and P. K. Ray, <i>Narayana numbers as sums of two base b repdigits</i>, Acta et Commentationes Universitatis Tartuensis de Mathematica, 26, 183-192, (2022). 6. K. Bhoi and P. K. Ray, <i>On the x- coordinates of Pell equations which are Narayana numbers</i>, Integers, #A107, (2022). 7. K. Bhoi and P. K. Ray, <i>On the Diophantine equation $B_{n_1} + B_{n_2} = 2^{a_1} + 2^{a_2} + 2^{a_3}$</i>, Communications in Mathematics, 31, 375-392, (2023).
Conference attended	<ol style="list-style-type: none"> 1. Attended National Seminar on Graph Theory and its Applications organized by Sambalpur University, India during February 27-28, 2020. 2. Attended the International webinar on recent developments in Number Theory, KIIT University, 17-20 August, 2020. 3. Attended the 2nd International webinar on recent development in Number Theory, KIIT University, 1-4 October, 2021. 4. Attended and presented the paper "Repdigits as difference of two Fibonacci or Lucas numbers" at International conference on Analysis and discrete Mathematics and 49th conference of OMS, 26-27 March, 2022. 5. Attended and presented the paper "Fermat numbers in Narayana's cows sequence" at 37th Annual Conference of RMS, SSN College of Engineering, Chennai, 06-08, December 2022. 6. Attended and presented the paper "On the Diophantine equation $B_{n_1} + B_{n_2} = 2^{a_1} + 2^{a_2} + 2^{a_3}$" at 50th Annual Conference of OMS, IMA Bhubanewar, 21-22, January 2023.. 7. Attended the Number Theory Workshop at NISER Bhubaneswar, 20-25 February 2023. 8. Attended the National Conference on Differential Equations, Difference Equations and their Applications organized by Sambalpur University, India on 22 March 2023.
Awards	DST-INSPIRE Fellowship 2019