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**Editorial****Combinatorial analysis and mathematical constants****Wenchang Chu\***

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Traditionally, combinatorial numbers (named after Bernoulli, Euler, Stirling, Catalan, and Fibonacci, etc) play a fundamental role and have wide applications in pure mathematics, theoretical physics, and applied sciences. To promote further progress in this fast-growing interdisciplinary field, *AIMS Mathematics* launched a Special Issue “Combinatorial Analysis and Mathematical Constants”.

During the open period of this special issue, it received 20 submissions and published 9 papers selected through peer-review process. Among them, there are five contributions about classical arguments. “Explicit formulae for Bernoulli numbers” by Nadia N. Li and W. Chu presents a systematic review of double sum expressions of Bernoulli numbers. “Some identities connecting Stirling numbers, central factorial numbers and higher-order Bernoulli polynomials” by Aimin Xu derives many new identities of Stirling numbers and Bernoulli polynomials. “Novel identities for elementary and complete symmetric polynomials with diverse applications” by Ahmed Arafat and Moawwad El-Mikkawy contains some interesting binomial quotients and sums by specializing symmetric functions. “On a generation of degenerate Daehee polynomials” by Sang Jo Yun and Jin-Woo Park introduces probabilistic Daehee polynomials and exhibits useful properties. “Probabilistic approaches to exploring Binet’s type formula for the Tribonacci sequence” by Skander Hachicha and Najmeddine Attia gives probabilistic proofs for a number of Binet formulae concerning tribonacci sequence.

There are also four articles on relatively advanced topics. “Some new identities for colored partitions with parts in multiples of 4” by Roberta R. Zhou and Fuquan Ren illustrates several deep modular equations and their applications to partition identities. In “Remarkable series concerning  $\binom{3n}{n}$  and harmonic numbers in numerators”, Chunli Li and W. Chu examined series containing binomial coefficient  $\binom{3n}{n}$  and harmonic numbers by elaborating the Lambert series and the cubic transformation formula for the  ${}_3F_2$ -series, where numerous unusual algebraic identities are shown, including three challenging conjectured ones. In “Evaluations of some Euler-type series via powers of the arcsin function” by Jiaye Lin, some analytic formulae for multifold Euler-sums are determined by employing the Maclaurin series of arcsin-powers. Finally, in “Yabu’s formulae for hypergeometric  ${}_3F_2$ -series through Whipple’s quadratic transformations”, Marta Na Chen and W. Chu evaluated, in closed form,

several difficult  ${}_3F_2$ -series, including Yabu's three remarkable formulae.

There are many other aspects which could not be covered in this collection, that reflects the state of the art only in very limited number of topics. However, we believe that the efforts made to edit this special issue for stimulating further explorations are worthwhile.

**Guest Editor:**

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**Conflict of interest**

The author declares no conflict of interest.



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