REMARKS ON FAMILIES OF COMBINATORIAL NUMBERS INCLUDING GENERATING FUNCTIONS AND THEIR APPLICATIONS

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In this talk we study not only some new families of special numbers and polynomials, but also their generating functions. We give relations between these numbers and some of the many well-known numbers, which are the Bernoulli numbers, the Fibonacci numbers, the Lucas numbers, the Stirling numbers, the Rook numbers, and the Genocchi numbers. By using these new numbers we give computation of the negative order Euler numbers. We sutud of these numbers and polynomilas with their applications in Probability and Statistics. We also give some combinatorial interpretations of these numbers including combinatorial numbers. It is well known that Computer science and Applied Mathematics study information and computation and also their theoretical foundations. Especially, algorithmic processes play a very important role in both areas. Therefore, we give two introduce algorithms for the computation of the new families of these special numbers and polynomials. Finally, we give some remarks and observations on these new families of special numbers and polynomials.

Keywords: Fibonacci numbers; Bernoulli numbers; Euler numbers; Central factorial numbers; Array polynomials; Stirling numbers; Generating functions; Functional equations; Binomial coefficients; Binomial coefficients; Combinatorial sum