Student Session, Room S-144
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Generalized Hurwitz zeta functions

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Abstract. The Riemann zeta function $\zeta(S)$ is defined by a Dirichlet series which is absolutely convergent in the half-plane $\mathrm{Re}(s) > 1$. We will present an exceedingly simple method of analytic continuation of $\zeta(s)$ to the whole complex plane. This method involves an application of binomial theorem for complex exponents. This technique can be applied in a much wider context. We are familiar with the Hurwitz zeta function $\zeta(s, a)$ where a is a rational number lying in the interval $(0, 1)$. The above method will help us to generalise the definition of $\zeta(s, a)$ so that a belongs to a much larger complex domain and obtain an analytic continuation for it. We will define generalized Hurwitz zeta functions and study some applications to regularized products. If time permits, I will also talk about some interesting recursive formulae related to $\zeta(2n)$ and efforts to generalize them to $\zeta(2n, a)$.