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Orthogonal Polynomials: First Minutes

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Abstract. It is standard to refer to Chebychev, Gauss and Jacobi as the creators of Orthogonal Polynomials. In fact, this topic goes back to the very early times of analysis, namely to March of 1655 when Wallis completed his famous book “Arithmetica of Infinitorum.” This book contained a remarkable Section 191, in which Wallis presented his understanding of a solution to the functional equation $b(s)b(s+2) = (s+1)^2$ found by Brouncker. Wallis’ presentation was not very clear and posed questions on Brouncker’s proof rather than explaining it. Later in his main paper on Continued Fractions (1739), Euler paid great attention to this result of Brouncker and mentioned that it would be highly desirable to recover Brouncker’s original arguments. In this talk, we present such a recovery and show how this problem is related to orthogonal polynomials.