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Craig Fraser* (cfraser@chass.utoronto.ca), Inst. Hist. Phil. Sci. Tech., University of Toronto, Toronto, Ontario M5S 1K7, Canada. *The Prehistory of the Cauchy-Riemann Equations*. Preliminary report.

The Cauchy-Riemann equations connect the real and imaginary parts of an analytic function. $f(z) = p(x, y) + iq(x, y)$ is an analytic function on a given domain if and only if the Cauchy-Riemann equations $\frac{\partial p}{\partial x} = \frac{\partial q}{\partial y}$, $\frac{\partial p}{\partial y} = -\frac{\partial q}{\partial x}$ are satisfied there. Although the equations are named after Augustin Cauchy (1789-1857) and Bernhard Riemann (1826-1866), they first appeared in 1752 in a book by Jean d'Alembert (1717-1783) on fluid dynamics. The paper traces the emergence of the equations and their subsequent development in the period before Cauchy. This history requires examination of the early theory of partial differential equations, a subject pioneered by Leonhard Euler (1707-1783) and d'Alembert from a few principles and methods of solution. The prehistory of the Cauchy-Riemann equations provides insight into the core technical ideas that would later develop into complex analysis. (Received August 28, 2008)