

The same equation with the same solutions (with just about the same description) reappears almost three centuries later when Oresmenor Galileo proved that  $s(t) = at^2$  is the only solution (with the initial condition  $s(0) = 0$  and  $v(0) = 0$  would be a convenient regularity supposition), Galileo wanted to show that the fall of



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## Topics

Functional equations and inequalities, and their applications to the natural, social and behavioral sciences; Hyers-Ulam stability; iteration theory

## Survey talk

*Wavelets and Functional Equations* given by Janusz Morawiec

## Special session

*Associativity, Generalizations and Applications* chaired by Jean-Luc Marichal

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bodies follows the quadratic

Later, in the course of the 18th, 19th and 20th centuries the problem was reduced to the equations

$$f(x+y) = f(x) + f(y) \quad (1)$$

$(x, y \geq 0)$  and

$$g(x+y) + g(x-y) = 2g(x)g(y) \quad (0 \leq y \leq x \leq \pi/2) \quad (5)$$

(which came to be called Cauchy's and d'Alembert's equation, respectively) and solved under satisfactorily weak conditions. Also, in mathematics, Newton's binomial law

$$(1+x)^\alpha = \sum_{n=0}^{\infty} \binom{\alpha}{n} x^n$$

was proved by Euler, Lacroix, Cauchy and Abel using (4) and the further Cauchy equations