1078-11-18 **Florian Luca*** (fluca@matmor.unam.mx), Mathematical Centre UNAM, 58089 Morelia, Michoacan, Mexico. *On a conjecture of Terai.* Preliminary report.

Given positive integers m and r let A and B be such that

$$A + Bi = (m + i)^r \qquad (i = \sqrt{-1}).$$

The triple of positive integers (a, b, c) given by $a := |A|$, $b := |B|$ and $c := m^2 + 1$ satisfies $a^2 + b^2 = c^r$, and these integers are coprime when m is even. It turns out that there are only finitely many pairs of positive integers (m, r) with m even such that with the previously constructed (a, b, c) the relation $a^x + b^y = c^z$ holds with some triple of positive integers exponents $(x, y, z) \neq (2, 2, r)$, and furthermore all such pairs (m, r) as well as the corresponding triples of positive integer exponents (x, y, z) are effectively computable, although this presenter has not computed any explicit upper bound on $\max\{m, r, a, b, c, x, y, z\}$. In the talk, we will survey some known results about the more general conjecture of Terai concerning the Diophantine equation $a^x + b^y = c^z$, and we will outline some of the ideas that go into the proof of the previously mentioned result. (Received September 30, 2011)