

## Semináře KO-MIX

Přednáška se koná v **pondělí 7. října 2019 od 14:20 hodin** v Zasedací místnosti DFP (4. patro budovy G areálu TUL - Liberec, Univerzitní nám. 1410/1).

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### A NEW RESULT ON JEŚMANOWICZ' CONJECTURE



**Anotation:** Let  $m, n$  be positive integers such that  $m > n$ ,  $\gcd(m, n) = 1$  and  $m \not\equiv n \pmod{2}$ . In 1956, L. Jeśmanowicz' [1] conjectured that the equation  $(m^2 - n^2)^x + (2mn)^y = (m^2 + n^2)^z$  has only the positive integer solution  $(x, y, z) = (2, 2, 2)$ . This conjecture has been still unsolved. For over twenty years, many papers have investigated Jeśmanowicz' conjecture for the case that  $mn \equiv 2 \pmod{4}$ . In this talk, combining a lower bound for linear forms in two logarithms due to M. Laurent [2] with some elementary methods in number theory, we prove that if  $mn \equiv 2 \pmod{4}$  and  $m > 30.8 n$ , then Jeśmanowicz' conjecture is true [5]. This result improves some previous results [3], [4] and [6].

[1] L. Jeśmanowicz', *Several remarks on Pythagorean numbers*, Wiadom. Math. 1 (1955/1956), 196-202 (in Polish).

[2] M. Laurent, *Linear forms in two logarithms and interpolation determinants II*, Acta Arith., 133 (2008), 325-348.

[3] M. H. Le, *On Jeśmanowicz' conjecture concerning Pythagorean numbers*, Proc. Japan Acad., Ser. A, 72, (1996), 97-98.

[4] T. Miyazaki and N. Terai, *On Jeśmanowicz' conjecture concerning Pythagorean triples II*, Acta Math. Hung. 147, (2015), 286-293.

[5] M. H. Le and G. Soydan, *An application of Baker's method to the Jeśmanowicz' conjecture on primitive Pythagorean triples*, Periodica Math. Hung. (2019), to appear.

[6] P. Z. Yuan and Q. Han, *Jeśmanowicz' conjecture and related equations*, Acta Arith. 184, (2018), 37-49.