

The problem of existence of Diophantine quadruples in  
 $\mathbb{Z}[\sqrt{-2}]$

(Talk)

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(joint work with Andrej Dujella)

We study the existence of Diophantine quadruples with the property  $D(z)$  in the ring  $\mathbb{Z}[\sqrt{-2}]$ . We significantly extended the results of Abu Muriefah and Al-Rashed and obtain several new formulas for Diophantine quadruples with the property  $D(a + b\sqrt{-2})$ , for integers  $a$  and  $b$  satisfying certain congruence conditions. In that way, we solved the problem of existence of  $D(z)$ -quadruples of a large class of elements  $z$  of the ring  $\mathbb{Z}[\sqrt{-2}]$ .

MSC2010: 11D09, 11R11.

Keywords: diophantine quadruples, quadratic field.

Section: Number Theory.