

Title: An irreducibility criterion for the sum of two relatively prime polynomials

Author(s): Weilin Zhang, Pingzhi Yuan and Tao Zhou

We partly extend a result of Cavachi and Bonciocat on the sum of two relatively prime polynomials and prove that a polynomial of the form $f(X) + Ng(X)$, where $f(X), g(X) \in \mathbb{Z}[X]$ are two non-zero relatively prime polynomials with $\deg f < \frac{1}{2} \deg g$, is irreducible over \mathbb{Q} for all but finitely many square-free positive integers N . In addition, we derive a necessary and sufficient condition for a polynomial $r + p^2g(X) \in \mathbb{Z}[X]$ to be reducible over \mathbb{Q} for a sufficiently large prime number p .

Address:

Weilin Zhang
School of Mathematical Sciences
South China Normal University
Guangzhou, 510631
China

Address:

Pingzhi Yuan
School of Mathematical Sciences
South China Normal University
Guangzhou, 510631
China

Address:

Tao Zhou
School of Mathematical Sciences
South China Normal University
Guangzhou, 510631
China