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Ali Alilooee* (aliloooy@yahoo.com), Macomb, IL 61455, and **Arindam Banerjee, Selvi Beyarslan** and **Huy Tai Ha**. *An optimal upper bound on the regularity of powers of edge ideals.*

Let $R = K[x_1, \dots, x_n]$ be a polynomial ring over a field K and $I \subset R$ an ideal. It is well known that if I is a homogeneous ideal whose generators all have the same degree, $\text{reg}(I^s)$ is asymptotically linear for $s \gg 0$. One question that arises here is to find the exact form of this linear function.

Beyarslan, Há and Trung identified this linear function for the edge ideals of trees and cycles. They finished their paper with the following question.

Question 1 *Let G be a graph with edge ideal $I(G)$. Let $\nu(G)$ denote the induced matching number of G . For which graphs G are the following true?*

$$\text{reg}(I(G)^s) = 2s + \nu(G) - 1 \quad \text{for } s \gg 0.$$

Here in this talk we first give an upper bound for the regularity of powers of edge ideals and then we partially answer this question. (Received September 16, 2015)