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Lenny Fukshansky* (lenny@cmc.edu) and **Yingqi Shi**. *Positive semigroups and generalized Frobenius numbers over totally real number fields.*

Frobenius problem and its many generalizations have been extensively studied in several areas of mathematics. We study semigroups of totally positive algebraic integers in totally real number fields, defining analogues of the Frobenius numbers in this context. We use a geometric framework recently introduced by Aliev, De Loera and Louveaux to produce upper bounds on these Frobenius numbers in terms of a certain height function. We discuss some properties of this function, relating it to absolute Weil height and obtaining a lower bound in the spirit of Lehmer's conjecture for algebraic vectors satisfying some special conditions. We also obtain bounds on the size of representations and number of elements of bounded height in such positive semigroups of totally real algebraic integers. (Received February 01, 2020)