Universal Quadratic Forms over Number Fields

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A universal form is a positive definite quadratic form with integral coefficients which represents all positive numbers – a classical example over the ring of integers $\mathbb{Z}$ is the sum of four squares $x^2 + y^2 + z^2 + w^2$. In the talk I shall consider the generalization to the case of universal quadratic forms over number fields: using continued fraction convergents, one can construct infinitely many real quadratic (and multiquadratic) fields which admit no n-ary universal forms. One can also refine this approach to obtain upper and lower bounds on the minimal arity of diagonal universal forms.

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