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Avoidability and Density of Words.

Many interesting Ramsey-type and Turán-type questions about subgraph homomorphisms can also be asked about subword homomorphisms. We say that word W encounters word V provided there is a nonerasing homomorphism ϕ such that $\phi(V)$ is a factor of W , that is, a subword of consecutive letters. A word V is unavoidable if, over every finite alphabet, every sufficiently long word encounters V . In 1982, Zimin classified all unavoidable words. Here we establish bounds for the associated Ramsey-type question: How long can words be that avoid unavoidable words? We also explore preliminary theory of subword homomorphism densities, which arose from our study of avoidability. (Received September 16, 2014)