Factoring ideals in Prüfer domains

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(Joint work with Evan Houston and Tom Lucas)

After giving a brief survey on recent works concerning various ideal factorizations in Prüfer domains (papers by Gabelli-Popescu, Olberding, Loper-Lucas), I will present some of the results obtained in a series of joint papers with Evan Houston and Tom Lucas.

In particular, I will show that, in certain Prüfer domains, each nonzero ideal can be factored as $I = I^v M_1 M_2 \cdots M_n$, where I^v is the divisorial closure of I and the M_i's are (not necessarily distinct) maximal ideals. This is always possible when the Prüfer domain is h-local and, in this case, such factorizations have certain uniqueness properties. This leads to new characterizations of the h-local property in Prüfer domains.

I will also explore consequences of these factorizations and give illustrative examples.