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Petter Andreas Bergh, David A. Jorgensen* (djorgens@uta.edu) and **W. Frank Moore.**

A converse to a construction of Eisenbud-Shamash.

Let (Q, n, k) be a commutative local Noetherian ring, f_1, \dots, f_c a Q -regular sequence in n , and $R = Q/(f_1, \dots, f_c)$. Given a complex of finitely generated free R -modules, we give a construction of a complex of finitely generated free Q -modules having the same homology. A key application is when the original complex is an R -free resolution of a finitely generated R -module. In this case our construction is a sort of converse to a construction of Eisenbud-Shamash yielding a free resolution of an R -module M over R given one over Q . (Received January 24, 2019)