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Julia F. Knight* (knight.1@nd.edu), University of Notre Dame, Department of Mathematics, 255 Hurley Hall, Notre Dame, IN 46556. *Structures associated with real closed fields and real closed exponential fields.*

Real closed fields and real closed exponential fields have been studied extensively by model theorists. These structures are also interesting from the point of view of computability. Tarski gave an elimination of quantifiers for the theory of the ordered field of reals in order to show that the theory is decidable. It is still unknown whether the theory of the reals with exponentiation is decidable. Macintyre and Wilkie showed that this theory is decidable provided that the real version of Schanuel's Conjecture holds. There are further interesting structures associated with real closed fields, with and without exponentiation: "value group sections", "residue field sections", and "integer parts". I will describe some results on these structures by Mourgues and Ressayre, and some further work with Paola D'Aquino, Karen Lange, Sergei Starchenko, and Salma Kuhlmann. (Received September 15, 2011)