1021-03-94 **Valentina Harizanov** (harizanv@gwu.edu), Department of Mathematics, The George Washington University, Washington, DC 20052, **Russell Miller*** (Russell.Miller@qc.cuny.edu), Mathematics Department, Queens College – CUNY, 65-30 Kissena Blvd., Flushing, NY 11367, and **Andrei Morozov** (morozov@math.nsc.ru), Sobolev Institute of Mathematics, Russian Academy of Sciences, Siberian Branch, Novosibirsk, 630090, Russia. *Automorphism Spectra of Computable Structures.*

The automorphism spectrum of a computable structure $\mathcal{M}$ is the set of all Turing degrees of nontrivial automorphisms of $\mathcal{M}$. Intuitively, it measures the complexity of the symmetries of $\mathcal{M}$.

We present current work by Harizanov, Morozov, and the speaker, with proofs included as time permits. Among other results, we show that many (but not all) upper cones of degrees are automorphism spectra, and that finite unions and sometimes even countable unions of such cones can be. This distinguishes the automorphism spectrum from other notions of spectrum. We also use a well-known construction by Hirschfeldt, Khoussainov, Shore, and Slinko to prove a transfer theorem: every automorphism spectrum, even in an infinite language, is actually the automorphism spectrum of a computable graph. Finally, we show that there is a structure whose automorphism spectrum contains exactly three degrees, pairwise incomparable. A spectrum with two incomparable degrees was already known to be impossible, and the three-degree result is the first example of an automorphism spectrum not closed under the join operation. (Received August 28, 2006)