

*The Annual Seminar on*

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*Shahid Beheshti University with the cooperation of the School of Mathematics, IPM, Tehran*

## **A Real Turing Machine**

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In this talk, I will present a model of computation on real numbers. It is a natural generalization of standard Turing machines. On the one hand, we hope this model fits the intuition of working mathematicians, for example, the usual functions like exponential function or the equality predicate are computable. In particular, I will revisit a theorem by Ning Zhong that every hyperbolic Julia set is computable. On the other hand, one can also study the logical or recursion theoretical aspects of this model, such as definability and reducibility. It has the potential to be generalized further to computation on higher types.