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Preface

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This volume aims to provide a state-of-the-art of the work recently done, by some relevant Spanish Research Groups, in the area of nets of processors.

It could be interesting for a wide spectrum of audience: from mathematicians and linguists to computer scientists that are looking for efficient new models of computation to apply to their problems. There is actually no previous knowledge needed. In a first reading, formal definitions and results could be skipped. The rest of the volume is written to be independent and fully understandable.

The structure of this family of bio-inspired models of computation contains very simple nodes (processors) able to perform very simple operations on their contents connected in a predefined net topology. Although the structure and operations are very simple (formally, with a bounded expressive power), it is easy to find instances of the model equivalent to Turing machine. This circumstance allows considering nets of processors as general purpose computers to solve any computable task. Their intrinsic parallelism makes possible to write versions of algorithms for classical intractable problems that improve the (at least temporal) performance.

This volume is structured as follows: firstly, it introduces the reader in the formal definition and properties of the family, showing, for the first time, a possible full and integrated (Meta) model for the different kind of nets of

processors currently used. Then, it shows together (again for the first time) results about the design of tools to consider these models as computers (simulators, programming languages, and some examples of problems solved with them).