

## PREFACE

The number of heavy particles detected at the  $\Upsilon(4S)$  with CESR and DORIS is being surpassed by the statistics collected by CLEO II with a continuously upgraded machine. On the high-energy  $e^+e^-$  side, owing to the favourable couplings at the  $Z_0$  resonance, the number of b-quarks produced at LEP during two years of operation is becoming comparable. Data are also coming from hadron colliders and fixed target facilities.

The physics of heavy flavours is providing some of the most sensitive tests of the Standard Model and should provide more insight in many of the theoretical puzzles left open by the Standard Model in the near future. Forward-backward charge asymmetry of beauty production and tau polarization are examples of such observables at high energy. Lifetimes and partial widths or branching ratios are important measurements which are pursued both at low energy and at the  $Z_0$  resonance.

B-d mixing seems appreciable and, in the framework of the Standard Model, a substantial B-s mixing and a sizeable  $CP$  violation is anticipated. Present data are compatible with maximal B-s mixing and the measurement of  $CP$  violation is left for the next generation of experiments and machines. The large data samples allow the search for rare decays both at low and high energy. Flavour changing neutral currents in b decays, absent at the tree level in the Standard Model, and predicted rather precisely at the one loop level, could soon provide tests of the physics beyond the Standard Model.

The San Miniato Topical Seminar on Heavy Flavours took place in June 1991 in the Conference Centre "I Cappuccini" of the Cassa di Risparmio di San Miniato. It was attended by about 85 physicists, representing more than 40 laboratories and 9 different countries, and by several representatives of European and American industries. The Seminar was sponsored and supported by the Italian Institute for Nuclear Physics (INFN) together with the Universities of Bologna and Florence, by the Regione Toscana and by the Cassa di Risparmio di San Miniato.

We would like to thank all the sponsoring institutions that made the meeting possible and in particular Prof. N. Cabibbo, President of the INFN, Prof. E. Verondini, Director of the Physics Department of the University of Bologna, Prof. N. Taccetti, Director of the Physics Department of the University of Florence, Dr. P. Benelli, President of the Regione Toscana Council, and Cav. L. Catastini, President of the Cassa di Risparmio di San Miniato.

We would like to thank most warmly the secretaries of the meeting and all the people who helped us with the organization and during the meeting, in particular Mr. A. Bassi, Ms. M. Boldini, Ms. M. Mazerand and Mr. S. Zagato.

The programme was constructed around main lectures followed by shorter talks, leaving in addition ample time for the discussions: Our final thanks go therefore to all the speakers for the quality of their contributions and to all the participants for their enthusiasm which greatly contributed to the success of the meeting.

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