CP violation in B meson decays

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In 1964, the CP violation was discovered in the neutral K meson system without any theoretical predictions in advance.
In 1973, Kobayashi and Maskawa (KM) proposed a model where CP violation is incorporated as an irreducible complex phase in the quark mixing matrix. The idea, which was presented at a time when only the u, d and s quarks were known to exist, was remarkable because it required the existence of six quarks. The subsequent discoveries of the c, b, and t quarks, and the compatibility of the model with the CP violation in the neutral K meson system led to the incorporation of the KM mechanism into the Standard Model.
In 1981, Sanda, Bigi and Carter pointed out that KM model predicted large CP violation in certain decays of B mesons for a range of quark mixing parameters. Subsequent measurements of the B meson lifetime and the discovery of $B^0\bar{B}^0$ mixing indicated that the parameters lie within such a range. Thus, measurement of CP violation in B meson decays provide important tests of the KM model.
Contrary to the theoretical progress, CP violation had not been found in decays of other particles than neutral K meson experimentally, during the twentieth century. In 2001, however, two large international collaborations, BaBar and Belle groups, announced the discovery of the CP violation in the neutral B meson decays, after five years of construction of the accelerators and detectors and two years of data accumulations.

The talk will give an overview on the status and progress in CP violation measurements in B meson dacays. Since the life time of B mesons are very much shorter than those of K mesons, the experimental methods to measure CP violation in B meson decays are different from those for K meson case. The talk will review some basic ideas specific to the CP violation in B meson decays and experimental methods, *e.g., Asymmetric B factories* . After these preparatory review, recent experimental results from Belle and/or BaBar groups will be presented. Finally, the talk will give a summary and outlook of CP violation in B meson decays.