Table 7.1 Knots

Knot invariants which are used to calculate distance tables are listed. The writhe of a knot diagram is not a knot invariant nor is it used in the computer programs which calculate distances. The writhe of the minimal 4-plat knot diagram, $< c_0, ..., c_n >$, is listed as an aid to identify the knot from its mirror image.

Many tables of knot invariants do not distinguish between a knot and its mirror image. In some sources 7_3 means the knot S(13, 4), but in other sources 7_3 means the knot S(13, 9), the mirror image of S(13, 4). For example, according to [BZ]'s table 1, the knot 7_3 is the 4-plat S(13,4) and the signature of 7_3 is 4; however, the signature of S(13,4) is -4, and the signature of its mirror image, S(13, 9) is 4. The signature and 4-plat notation given in [BZ]'s table 1 were compiled from two different sources which were not in agreement in this case.

In table 7.1 all invariants were calculated from the minimal 4-plat diagram $< c_0, ..., c_n >$ and are in agreement with respect to mirror images. Writhe is an invariant of minimal diagrams if the minimal diagram is alternating. Since writhe$(K) = -$writhe(K^*) for a given knot diagram K, the writhe of a minimal diagram of a 4-plat knot can be used (if nonzero) to distinguish between mirror images. The writhe of S(13, 4) $=$ S(13, 10) $= < 1, 2, 4 >$ is 7 as is the writhe of the diagram of 7_3 in [Rl]. Thus [Rl]'s $7_3 =$ S(13, 4). Although writhe of a minimal diagram of a knot is not in general a knot invariant for non-alterating knots (10_{165} has both a minimal diagram with writhe 8 and a minimal diagram with writhe 10), it is an invariant for all prime knots of less than ten crossings and thus can also be used to distinguish between mirror images for the eight crossing non 4-plats listed in the table.

Writhe of the minimal diagram, the order of the first homology group of the double branched cover of the knot, and the signature of the knot are listed for all knots. For 4-plat knots, S(a,b) and $< c_0, ..., c_n >$ are also given. If the knot is a composite of 4-plats, the knot is also listed as $< c_0, ..., c_n > \# < d_0, ..., d_m >$.