

**Spring** Compute a spring embedding (marked nodes remain fixed). The algorithm is animated and allows one to stop as soon as one is satisfied with the result. Also, the maximum number of iterations can be set in the graph options menu. This embedding often gives nice results with graphs which are not too dense.

**Planar-1, -2** Compute two different kinds of planar embeddings (the graph has to be planar, of course).

## 14.7 Tests Submenu

This menu contains operations for testing different graph properties: simpleness (absence of parallel edges), connectedness, biconnectedness, bipartiteness (i.e., 2-colorability) and planarity.

## 14.8 Tools Submenu

This menu contains the algorithms for computing LLB's, ensemble assignments, colorings and maximum ensemble cliques, as well as two panels for displaying statistic informations and results. The operations depend on the current service order and the maximum ensemble size specified in the service options panel, as well as the parameters in the tool options panel. Possibly time-intensive operations (LLB's, iterative colorings, ensemble cliques) can be interrupted when the '**interrupts**' option of the tool options panel is enabled, and execution times will be reported when the '**timer**' option is turned on.

The node orders to be used by the LLB/maxclique and the coloring tools can be specified using the corresponding controls in the tool options panel. Nodes can be ordered by their numbers ('**def**'), at random ('**rand**'), using a (recursive) smallest-last ('**SL**'), (non-recursive) largest-first ('**LF**') or a coloring order ('**col**'). In the latter case nodes are ordered by existing color numbers, which also enables the iterative sequential coloring algorithm (the number of iterations is then determined using the '**color iterations**' control). The specified orders can also be reversed using the corresponding '**reverse**' options.

The LLB and SFF/GFF operations can also be applied to a subset of the nodes by setting the '**apply FF/LLB to**' option to '**marked**' (for convenience, this option can also be toggled using the '**Use marked/all**' button of the tools menu). This mode is indicated by a '+' symbol in the status line. Currently, colorings and maximum cliques of the ensembles can only be determined for the whole graph. But subcolorings and -cliques can be found by deleting all but the ensembles to be considered using the '**Clear ensembles**' option of the '**Services**' menu.

The menu offers the following options:

**LLB1 (sum)** Compute the sum LLB and mark the nodes in a worst clique.

**LLB2 (FF)** Compute the First-Fit LLB.

**LLB3 (strict sum)** Compute the strict sum LLB.