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Ultimate parameters of the photon collider at the ILC

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It is very likely that due to the cost "optimization"the ILC will have only one detector and no further energy upgrade. This scenario with a long run time at the energy 2E<=500 GeV only strengthens the case of the photon collider. In any case, it is very important to develop a design which allows the best possible parameters of the photon collider. The gamma-gamma luminosity is determined only by the geometric e-e- luminosity which depends on beam emittances. Although the gamma-gamma luminosity with damping rings optimized for e+e- collsions will be sufficient for good physics but its further increase is very desirable, if it is technically possible and cost not too much. In this talk I consider ways of increasing the gamma-gamma luminosity from 2-3 times (by optimizing damping rings) to more than one order of magnitude (using a laser cooling). This will allow to measure the Higgs self interaction and to study many other processes at a new level of accuracies.

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