For the 2-phase BCCD's we use the following set of data : TV, Comp, and also the total electric field as a parameter. Each solution of the Poisson equation gives the values of the maximum signal charge which can be stored. Then a set of curves is drawn for a value of h_{ox}. This study has also been performed for different values of x_j. (see fig.1).

The behaviour of a 4-phase BCCD's is also given through the variation of x_j vs TV (the parameter of the set of curves is the electric field). see fig.2. These numerical results indicate that reducing both x_j and h_{ox} implies an increase in the storable signal charge. When keeping constant the electric field, the reduction of h_{ox} from 1400Å to 400Å causes the signal charge to be nearly twice more important. The same result is obtained when the junction depth x_j is decreased from 0,9 to 0,3 µm.

In order to appreciate the effect of the gate width reduction (from 50 to 5 µm), on the potential well magnitude V_M, the 2-D Poisson equation has been solved normally to the transfer direction. These calculations show an important reduction of V_M wich could reach 25% as soon as the gate width W becomes less than 20 µm.

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'ZOMBIE' --- a coupled process - device simulator

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The miniaturization of integrated circuits requires improved physical models to describe the redistribution of the impurities during oxidation, diffusion and annealing steps. Second order effects have become important since the deviation from the desired impurity profile of several thenth of a micron can have a decisive influence on the device performance.

Succeeding device simulation can verify the improvements of modfications of the process parameters on the electric device performance.

This situation incited us to develop the coupled process-device simulator 'ZOMBIE'. This program package is able to cover improved models for process (and device) simulation and permits in a fairly simple way the exchange or modification of the model. 'ZOMBIE' is therefore a suitable tool for the development and verification of up-to-date process models.

As an example of the capabilities of our program we simulate the fabrication and the electric characteristic of a simple n^+-p-p^+ diode. The n^+ layer is made by a high dose arsenic ion implantation. Accurate simulation requires a dynamic cluster model to obtain realistic values of the electrical active arsenic concentrations. The p^+ domain is fabricated by a predeposition. Here a high level of numerical methods, e.g. the fully adaptive grid, is essential for an accurate simulation of the process.

The transient device simulation of the n^+-p-p^+ diode shows the capabilities of the device simulator. The device can be simulated voltage controlled, current controlled or within a simple circuit.

The numerical background which enables the user to perform these computations is system provided and works without any user interaction. The most important features are the discretization of the partial differential equations, the fully adaptive spatial grid and the automatic time step control. The numerical strategies will be discussed roughly and explained by the upper simulation examples.

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A FINITE ELEMENT MODEL FOR CLASSICAL LOSSES IN AMORPHOUS LAMINATIONS AND ITS VERIFICATION

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On account of the increasing use of magnetic amorphous alloys in electrical machinery, it is important to verify the possibility of evaluating the magnetic losses in such materials. To this purpose the paper presents a first approach for computing classical losses in nonlinear indefinite