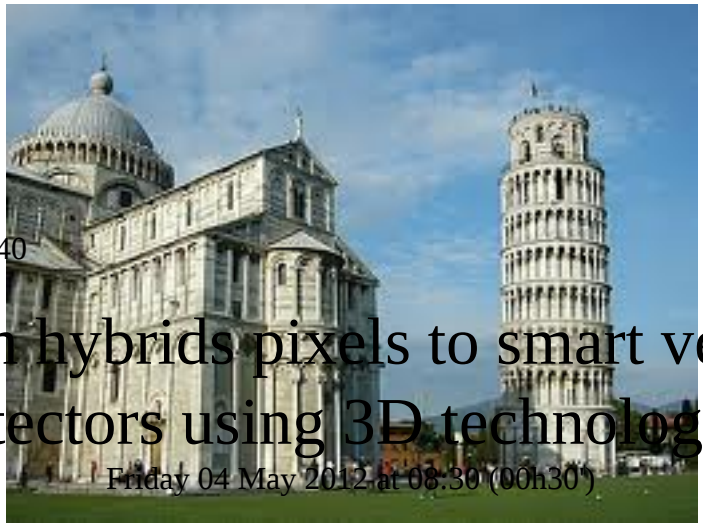
WIT2012 Workshop on Intelligent Trackers



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From hybrids pixels to smart vertex detectors using 3D technologies

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Content :

Even if 3D electronics suffers difficult beginnings, industrial trends are now strongly pushing that way to a production phase. Keeping in mind the usual arguments of power consumption, speed, technology mixing, new and less expected possibilities are now appearing.
In trackers world, few attempts have been made to introduce 3D not only as an alternative to shrinking technologies but also as a source of new possibilities.
Post-processed TSV have yet proven to be feasible in HEP circuits allowing for new routing schemes of circuits IO without modifying the original process. On the other hand, 3D structures as part as the chip process offers more possibilities but the price to pay is the poor commercial offers.
With new ideas for building depleted sensors with standard MOS process, 3D tech could allow a fully integrated fabrication of future vertex chips (sensor + read-out) in the same production chain.
This talk will try to give an idea of the efforts made and of the results obtained using these 3D techniques in the scope of HL LHC R programs (ATLAS)

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