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Production of Heavy Baryons at the SuperB

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The SuperB accelerator will be an asymmetric heavy flavour factory where e^+ , e^- beams will collide with a peak luminosity of $10^{36} \text{ cm}^{-2} \text{ s}^{-1}$ at the $Y(4S)$ resonance c.m. energy of 10.58 GeV. The B - B bar meson pairs, produced with a B.R. $> 96\%$ from the decay of the $Y(4S)$, will allow to measure the B -meson decay channels with unparalleled precision.

The SuperB e^+ , e^- beams are characterized, at the interaction region (I.P.), by transversal dimensions of only few microns. This fact could open the possibility to put very close to the I.P. a suitable shaped target to intercept the negative B mesons before their decay. As a result of the interaction of the slow negative B mesons with the nucleons of the target nuclei, baryons with beauty, as the Λ_b and the Σ_b/Σ_b^* , can be produced with high cross section. A production rate in excess of 2000 heavy baryons per day per nucleon seems achievable. If confirmed, this would allow a systematic study of the properties of the heavy baryons with beauty (for which not so many data exist) and, furthermore, to investigate their interactions with nucleons in nuclei, a topic totally unexplored until now. The possibility to implement such a configuration on the SuperB will be discussed and the results of preliminary calculations presented.

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