Title: Hunting of new physics through b -> s transitions

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Project PI: Ashutosh Kumar Alok

Project Co-PI: Subhashish Banerjee

Brief description: In this project we considered the minimal extension of the standard model of particle physics by addition of a vector like down-type and up-type quark. Such exotic fermions can appear in E_6 grand unified theories as well in models with large extra dimensions. Using all relevant constraints from flavor physics, we obtained bounds on the quark-mixing matrix. This enabled us to study the flavor signatures of these new physics models. We also studied decoherence effects in B-mesons.

Outcome:

- Obtained flavor signatures of iso-singlet vector like down-type and up-type quark models.
- Obtained the most stringent constraints on the decoherence parameter related to B_d meson.
- Publications in high-impact journals.

Publication if any:

1. A. K. Alok, S. Banerjee, D. Kumar, S. U. Sankar, Nucl. Phys. B906, 321 (2016).
2. S. Banerjee, A. K. Alok , Richard MacKenzie, Eur. Phys. J. Plus 131, 129 (2016).
3. A. K. Alok, S. Banerjee, D. Kumar, S. U. Sankar, David London, Phys. Rev. D92, 013002 (2015).
4. A. K. Alok, S. Banerjee, S. U. Sankar, Phys. Lett. B749, 94 (2015).
5. A. K. Alok, S. Banerjee, Phys. Rev. D88, 094013 (2013).