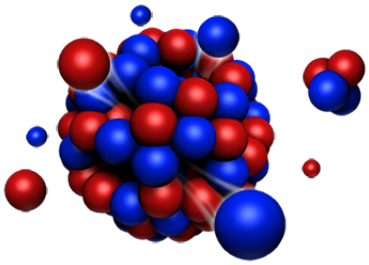

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The ESS Tuning Beam Dump

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The European Spallation Source is an ambitious project to build a 5 MW spallation neutron source. The Spanish contribution to this European project will be 5% of the total cost. Based on the new tendencies on Science construction projects a significant fraction of this contribution (up to 80 %) will be in-kind. ESS-BILBAO Consortium has been committed to channel this contribution. One of the key in-kind contributions from the ESS-BILBAO is the Tuning Beam Dump (TBD), which will be implemented in direct downstream of the ESS linac. The TBD is made of CuCrZr, and it is designed to handle time averaged beam power of up to 12.5 kW. The deposited heat is removed by massive copper volume contacting the TBD, via heat conduction. The conducted heat is eventually removed by water-cooled stainless steel plate which is in contact with the copper volume. The reason why the TBD is not directly cooled by water is to avoid massive water radiolysis induced by the secondaries. In this paper, we present the design of the Tuning Beam Dump at ESS. The analyses of beam induced thermomechanical behavior, radiation damage effect on structural integrity, required shield, and radionuclides inventory and activation are presented. Also reported are manufacturing processes and factory acceptance test plan.

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