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Abstract for an Invited Paper  
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**Robert R. Wilson Prize I : Intrabeam Scattering and Touschek Effect**

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Intrabeam scattering and the Touschek effect are explained and compared. Especially intrabeam scattering plays an important role in colliders and synchrotron radiation sources where it limits the beam lifetime and the brightness, respectively. A short history of the consequences of both effects in different accelerators is given. An invariant due to intrabeam scattering is discussed which shows that only below transition energy a stable particle distribution is possible whereas above transition energy a stable distribution cannot exist.