Auslander-Reiten theory in triangulated categories

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Abstract: The talk is about partial results of my master's thesis. Let $\mathcal{A}$ be a triangulated category and let $\mathcal{C}$ be an extension-closed subcategory of $\mathcal{A}$. First, we give some new characterizations of an Auslander-Reiten triangle in $\mathcal{C}$, which yields some necessary and sufficient conditions for $\mathcal{C}$ to have Auslander-Reiten triangles. Next, we study when an Auslander-Reiten triangle in $\mathcal{A}$ induces an Auslander-Reiten triangle in $\mathcal{C}$. As an application, we study Auslander-Reiten triangles in a triangulated category with a t-structure. Finally, we specialize to the bounded derived category of all modules of a noetherian algebra over a complete local noetherian commutative ring. Our result generalizes the corresponding result of Happel's in the bounded derived category of finite dimensional modules of a finite dimensional algebra over an algebraically closed field.