1136-18-60 **C.C. Cheng** and **Karimah Sweet*** (ksweet@oakland.edu). *Small Cancellative Categories of Homological Dimension One.*

Let $\mathbf{C}$ be a small category and R be a ring with identity, and let $\mathbf{M}$ denote the category of left R-modules. The R-cohomological dimension of $\mathbf{C}$ is defined by $\mathrm{cd}_R\mathbf{C}$ =pd ΔR, where where ΔR denotes the constant R-valued functor $\mathbf{C} \to \mathbf{M}$, and pd$\Delta R$ denotes the projective dimension of ΔR in the functor category $\mathbf{M}^{\mathbf{C}}$. The R-homological dimension of $\mathbf{C}$ is defined by $\mathrm{hd}_R\mathbf{C}$ =wdΔR, where wdΔR denotes the weak (or flat) dimension of ΔR. We prove that if $\mathbf{C}$ is cancellative and $\mathrm{hd}_R\mathbf{C} \leq 1$, then $\mathbf{C}$ is embeddable in a groupoid, and furthermore, if $\mathrm{cd}_R\mathbf{C} \leq 1$ and $\mathbf{C}$ is connected, then $\mathbf{C}$ is embeddable in a groupoid which is equivalent to a free group. (Received December 22, 2017)