Quantum critical behavior of heavy fermion Ce(Ru$_{1-x}$Rh$_x$)$_2$Si$_2$ ($x = 0, 0.03$) HIROAKI KADOWAKI, Dept. of Physics, Tokyo Metropolitan Univ., Japan, YOSHIKAZU TABATA, SHUZO KAWARAZAKI, Dept. of Physics, Osaka Univ., Japan, MASUGU SATO, JASRI, Japan, NAOFUMI ASO, ISSP, Univ. of Tokyo, Japan, STEPHANE RAYMOND, CEA-Grenoble, France — A focus of recent experimental and theoretical studies on heavy fermion systems close to quantum critical points (QCP) is directed toward revealing the nature of the fixed point, i.e., whether it is the itinerant antiferromagnet (spin density wave) type or a locally critical QCP. The latter local QCP was supported by a neutron scattering study of the heavy fermion CeCu$_{6-x}$Au$_x$ showing the E/T scaling. In this work, we have investigated another archetypal heavy- fermion Ce(Ru$_{1-x}$Rh$_x$)$_2$Si$_2$ [$x = 0$, 0.03 (tuned to a QCP)] using single-crystalline neutron scattering. The dynamical susceptibility Im$\chi(Q, E)$ has been measured with high accuracy in a temperature range $1.5 < T < 20$ K. The quantum critical behavior of Ce(Ru$_{1-x}$Rh$_x$)$_2$Si$_2$ will be discussed based on the QCP of itinerant antiferromagnet ($E/T^{3/2}$ scaling).

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