Abstract Submitted
for the OSF07 Meeting of
The American Physical Society

Convolution Dynamics G.C. STEY, Ohio State University — Define T on L^1 into L^1 by $(Tf)(x) = \int_{-\infty}^{\infty} g(x-y)f(y)dy$. With assumptions on $g(x)$ and its Fourier transform,$\hat{g}(t)$, requiring, among other things, that there be only one point,t_0, at which $|\hat{g}(t_0)| = sup_{s\epsilon R}|\hat{g}(s)|$ and that $0 < Re(K_2)$, where $K_j = (-id/dt)^j ln(\hat{g}))(t)|_{t=t_0}$, it is seen(G.C. Stey, dissertation,Ohio State Univ.,2007) that for $L = 1, 2, 3, ...$, $\parallel T^n \parallel = |\hat{g}(t_0)|^n\{\Sigma_{\ell=0}^{L} c_\ell(\frac{1}{n})^\ell + o((\frac{1}{n})^L)\}$ as $n \to \infty$,
where $c_\ell = \frac{1}{\sqrt{2\pi|K_2|}} \int_{-\infty}^{\infty} e^{\{-w^2 Re(\frac{1}{2K_2})\}} S_{2\ell}(w)dw$, where $S_0(w) = 1 = Q_0(w)$,
$S_r(w) = \Sigma_{m=1}^{r} m! \binom{1/2}{m} \Sigma'_{(m_1,m_2,...,m_r),m} \Pi_{j=1}^{r} [\Sigma_{j_1=0}^{j} Q_{j-j_1}(w)\bar{Q}_{j_1}(w)]^{m_j}/m_j!$, with
$Q_r(w) = \Sigma_{m=1}^{r} He_{2m+r}(\frac{-w}{\sqrt{K_2}}) \Sigma'_{(m_1,m_2,...,m_r),m} \Pi_{j=1}^{r} \{(\frac{1}{\sqrt{K_2}})^{2+j} \frac{K_{2+j}}{(2+j)!}\}^{m_j}/m_j!$ $(r = 1, 2, 3, ...)$, $He_k(u) = \exp(u^2/2)(-d/du)^k \exp(-u^2/2)$, and Σ' indicates $\Sigma_{j=1}^{r} m_j = m$ and $\Sigma_{j=1}^{r} j\, m_j = r$,with nonnegative integers m_j.

G. C. Stey
Ohio State University

Date submitted: 15 Oct 2007 Electronic form version 1.4