1106-60-2724   **Barbara H Margolius*** (`b.margolius@csuohio.edu`), Cleveland State University, Department of Mathematics, 1515RT, 2121 Euclid Ave, Cleveland, OH 44115, and **Malgozata M O'Reilly**, Hobart, Tasmania, Australia. *The analysis of cyclic stochastic fluid flows with time-varying transition rates.*

We consider a stochastic fluid model (SFM) $\{(\widehat{X}(t), J(t)) : t \in \mathbb{R}^+\}$ driven by a continuous-time Markov chain $\{J(t) : t \in \mathbb{R}\}$ with a time-varying generator $T(t)$ and cycle of length 1 such that $T(t) = T(t+1)$ for all $t \geq 0$. We derive theoretical expressions for the key measures for the analysis of the model, and develop efficient methods for their numerical computation. We illustrate the theory with a numerical example. This work is an extension of the results in Bean, O'Reilly and Taylor(2005) for a standard fluid flow model with time-homogeneous generator. (Received September 16, 2014)