Zoltan Dombovari: On the Nonsmooth Dynamics of Conventional Milling Processes

The presented work shows an effective description of the phase space of conventional milling process, which is a timeperiodic,
nonlinear, delayed system due to the rotation of the milling tool, the cutting force characteristics and the appearing regenerative
effect, respectively. It is shown that the tool can reach such large amplitude that it misses cuts and instead of a single delay its
multiplied version operates. The vibration can be so violent that all teeth can leave the surface and the tool can actually fly over the
surface bypassing any cuts. This effect results in the cutting force switching completely off and the dynamic system behaves as a finite
dimensional system till one of the teeth bites back to the material again.