	Shankar's (lindblad)	Mine (denmat_dynm_v4.4)
Output files	Energy-resolved density and spin in dist.? Imε in imEps.?	Total or energy-resolved observables of electrons or holes in $(OB)_elec(hole)_tot(ene).out. OB can be fn, Sx, Sy, Sz. If pump and probe are active, write Imε in ./probe_results/imEps.$(it).dat
Interface	lindbladInit	lindbladInit_for-DMD-4.4 or Internal MoS2 model
Restart	No	Yes The code will write time center of pump, current time and density matrices at each reporting time. Restart will read previous ending time as starting time t0, read time center of pump in case it is not default and read density matrices.
Band ranges	Two – one for probe ; one for pump and e-ph for both conduction and valance bands	Three – for probe ; for pump ; for e-ph. For e-ph, you may consider only conduction or valence bands (useful for GaAs)
Electron-phonon dynamics	Lindblad equation without oscillation factor exp(i(w-w')t)	Both Lindblad and conventional equations $\frac{\partial \rho_{12}^{k}}{\partial t} = \frac{\pi}{\hbar N_{k'}} \sum_{345}^{k'} \begin{bmatrix} (I-\rho)_{13}^{k} \mathcal{P}_{3245}^{I,kk'}(t) \rho_{45}^{k'} \\ -(I-\rho)_{34}^{k} \mathcal{P}_{3415}^{II,kk'}(t) \rho_{42}^{k'} \end{bmatrix} + H.C.,$ $\mathcal{P}_{1234}^{I}(t) = P_{1234} \exp\left[i\left(\epsilon_1 - \epsilon_2 - \epsilon_3 + \epsilon_4\right)t\right],$ $\mathcal{P}_{1234}^{II}(t) = P_{1234} \exp\left[i\left(-\epsilon_1 + \epsilon_2 + \epsilon_3 - \epsilon_4\right)t\right]$ For Lindblad, $P_{1234}^{I} = \sum_{\pm\lambda} G_{13}^{\pm} G_{24}^{\pm,*} n^{\pm}$ $P_{1234}^{II} = \sum_{\pm\lambda} G_{31}^{\pm} G_{42}^{\pm,*} n^{\mp}$ For conventional, $P_{1234}^{I} = \sum_{\pm\lambda} g_{13}^{\pm} \mathcal{G}_{24}^{\pm,*} n^{\pm}$ $P_{1234}^{II} = \sum_{\pm\lambda} g_{31}^{\pm} \mathcal{G}_{42}^{\pm,*} n^{\mp}$ $\mathcal{G} = g\delta$ of a kpair (k,k'). "n" is phonon occupation. Notice that as P? includes "n", temperature must be the same as that in initialization. The input P? matrices data are stored in dense form. Optionally, by setting alg_sparseP=1, the

		code can convert them to sparse ones. In any case, you can search "ns_tot" in output to see how many elements of P? matrices are larger than several thresholds (default 1e-40).
Exp(iwt) in observables	No	Yes for both spin and probe (multiply momentum matrix element by exp(iwT), where T is time center of probe pulse)
Perturbation	Pump	Magnetic field and pump
Pump dynamics	Instantaneous perturbation; Lindblad dynamics	Instantaneous perturbation; Lindblad dynamics; Coherent dynamics (following Shankar's report dmDynamics.pdf)
Phenomenon relaxation		\dot{rho} = - (rho - rho_eq) / tau_phenom for selected bands
Time		See "3. Time and measure" in README_input.txt