MCMC with RTMB

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MCMC with RTMB

- Assume we have an unnormalized probability density function $\phi(\theta)$
- MCMC is a collection of methods to simulate a Markov chain $\theta_1, ..., \theta_N$ with an equilibrium distribution given by $\phi(\theta)$
  - `https://chi-feng.github.io/mcmc-demo/`
- This is probably known to some from WinBUGS, JAGS, NIMBLE, or Stan
- RTMB can use the MCMC algorithms from Stan, including:

  HMC the Hamiltonian sampler
  NUTS the No-U-Turn sampler
- Using the R-package **`tmbstan`** available on CRAN

MCMC with RTMB

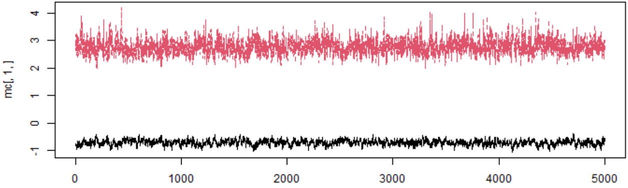
- Just as before, set up the ad-machinery:

```
obj <- MakeADFun(f, par)
```

- Run tmbstan

```
library(tmbstan)
mcmc = tmbstan(obj, chains=1,iter = 2000)
```

  - Input sent to **`stan::sampling`**



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- Example with AR1 is included in `mcmc.R`