

```

1 import dad
2
3 def model(params, ns, theta0, pts):
4     Nanc, N1F, N2B, N2F, Tp, T = params
5
6     # Set numerical grid
7     xx = yy = dad.Numerics.default_grid(pts)
8
9     # Initialize ancestral time interval of constant size
10    phi = dad.PhiManip.phi_1D(xx, nu=Nanc, theta0=theta0)
11
12    # Second time interval
13    # Population size dynamic is a constant size N1F
14    phi = dad.Integration.one_pop(phi, xx, T=Tp, nu=N1F, theta0=theta0)
15
16    # Population split
17    phi = dad.PhiManip.phi_1D_to_2D(xx, phi)
18
19    # Dynamic for the population 1 is a constant size N1F
20    # Specify exponential function for the dynamic for population 2
21    n2_func = lambda t: N2B * (N2F / N2B) ** (t / T)
22    # Third time interval
23    phi = dad.Integration.two_pops(phi, xx, T=T, nu1=N1F, nu2=n2_func,
24                                   theta0=theta0)
25
26    # Evaluate expected data statistic using numerical methods
27    sfs = dad.Spectrum.from_phi(phi, ns, (xx,yy))
28    return sfs

```

Time
interval

Time
interval

Split

Time
interval

NANC

T_P

T

0

Population 1

N1F

N2B

N2F

Population 2