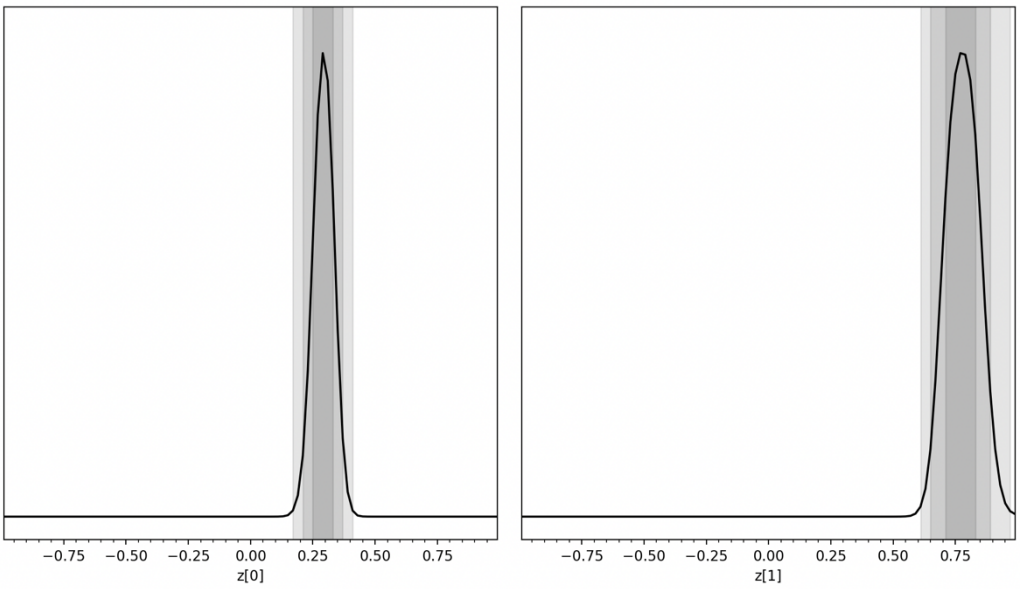
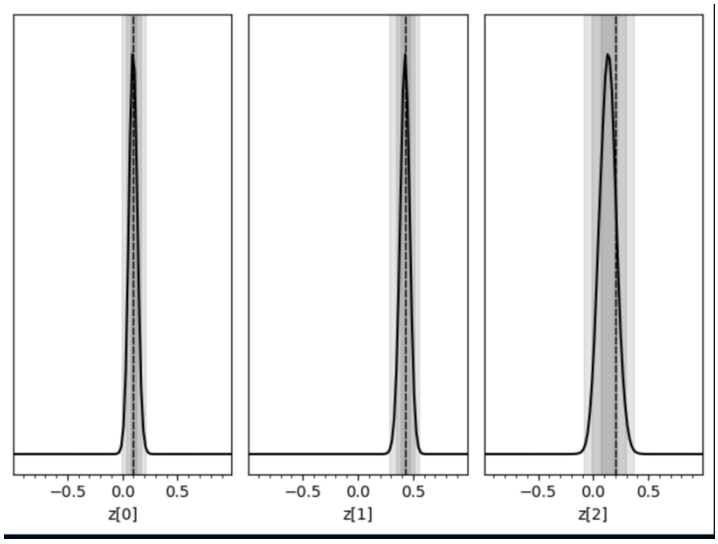
Swyft Plots

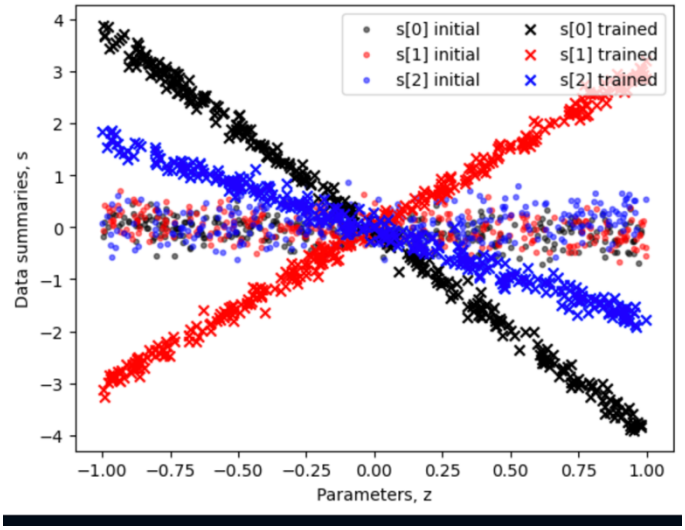
1. Swyft Intro and Set Up

- Learning how to import all Swyft libraries and set up Swyft modules – the simulator is a swyft.Simulator class and the networks are swyft.SwyftModule classes - the networks deal with the training of logratioestimators
- This is an example with some graph-style simulator and a prior given by a specific sample from the Simulator
- Can see that the posteriors are quite localised – not sure about the style of the posterior?



2. Informative Data Summaries
    - Based on a linear regression problem – using a NN embedding net to learn informative data summaries, make training more efficient and accurate
    - Got the following posteriors for the parameters, and then compared the untrained data summaries with the trained ones to see the correlation with parameters





3. Multidimensional Posteriors
    - Like the first example in terms of set up of the network and the trainer/simulator, but now over multiple dimensions and we look at the corner plot of the marginals between the parameters

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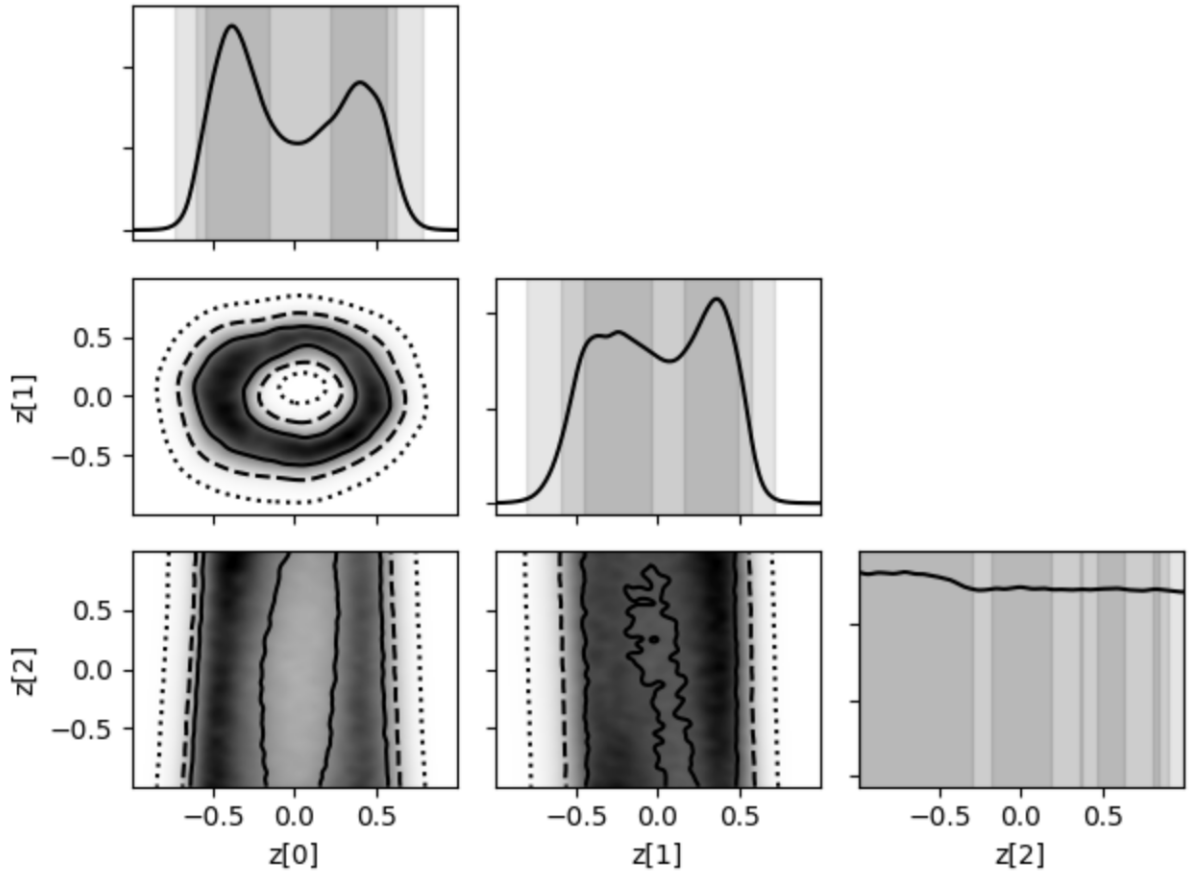

4. <u>Coverage Plots</u>
    - Need some way of judging if posteriors are 'correct' or not – use Bayesian coverage
    - Wrt Bayesian inference, coverage is the probability that some credible interval contains the true parameter value – in frequentist, 95% C.I. means if we repeat the experiment many times, 95% of the intervals will contain the parameter values; in Bayesian, the probability that value is in the interval is 95%
    - If we take a (1-α) – credible interval, the fraction which should have the true value is (1-α), so we test it on the last 500 samples
    - Use zz-plot to emphasise the higher credibility regions and the uncertainty in the coverage tests with relatively few samples
    - Want to avoid undercoverage (posteriors too narrow, potential overfitting) or overcoverage (posteriors too wide, potential underfitting)