

表 3.5: 几种常见轻粒子间聚变反应的反应截面 σ

| $\lg(\varepsilon[\text{keV}])$ | $\lg(\sigma[\text{b}])$ | | | | |
|--------------------------------|-------------------------|----------|------------------|---------|----------------------|
| | D+T | D+D (总) | D+ ^3He | T+T | T+ ^3He (总) |
| 0 | -10.856 | -11.593 | -26.057 | -30.258 | -14.425 |
| 0.1 | -9.3303 | -10.209 | -22.909 | -26.734 | -12.71 |
| 0.2 | -7.9804 | -8.9861 | -20.114 | -23.597 | -11.193 |
| 0.3 | -6.7876 | -7.9074 | -17.634 | -20.811 | -9.8518 |
| 0.4 | -5.7342 | -6.9569 | -15.434 | -18.341 | -8.6675 |
| 0.5 | -4.8046 | -6.1206 | -13.483 | -16.152 | -7.6228 |
| 0.6 | -3.9851 | -5.3861 | -11.756 | -14.211 | -6.7027 |
| 0.7 | -3.2632 | -4.7424 | -10.227 | -12.493 | -5.8937 |
| 0.8 | -2.6273 | -4.1763 | -8.874 | -10.972 | -5.1839 |
| 0.9 | -2.067 | -3.6827 | -7.6786 | -9.6273 | -4.5623 |
| 1 | -1.5731 | -3.2536 | -6.6231 | -8.4401 | -4.0196 |
| 1.1 | -1.136 | -2.8791 | -5.692 | -7.3932 | -3.5482 |
| 1.2 | -0.74739 | -2.5555 | -4.8714 | -6.4712 | -3.1389 |
| 1.3 | -0.3991 | -2.276 | -4.1488 | -5.6608 | -2.7849 |
| 1.4 | -0.084144 | -2.035 | -3.5127 | -4.9499 | -2.5 |
| 1.5 | 0.1996 | -1.8279 | -2.9528 | -4.328 | -2.2302 |
| 1.6 | 0.44475 | -1.6498 | -2.4593 | -3.7855 | -2.0093 |
| 1.7 | 0.62472 | -1.4971 | -2.0226 | -3.3144 | -1.8289 |
| 1.8 | 0.69946 | -1.3632 | -1.6335 | -2.9076 | -1.6812 |
| 1.9 | 0.65748 | -1.2516 | -1.2825 | -2.5588 | -1.5603 |
| 2 | 0.53665 | -1.1535 | -0.96084 | -2.2621 | -1.4633 |
| 2.1 | 0.38188 | -1.068 | -0.6621 | -2.012 | -1.3853 |
| 2.2 | 0.21833 | -0.99293 | -0.38965 | -1.8043 | -1.3218 |
| 2.3 | 0.05609 | -0.92822 | -0.17422 | -1.6287 | -1.2682 |
| 2.4 | -0.10137 | -0.8732 | -0.083928 | -1.4847 | -1.2201 |
| 2.5 | -0.25289 | -0.82791 | -0.15264 | -1.366 | -1.1725 |
| 2.6 | -0.39774 | -0.79246 | -0.31886 | -1.2694 | -1.1212 |
| 2.7 | -0.53488 | -0.76661 | -0.51378 | -1.1936 | -1.0611 |
| 2.8 | -0.66266 | -0.74846 | -0.6767 | -1.1391 | -0.98934 |
| 2.9 | -0.77855 | -0.73295 | -0.78981 | -1.1068 | -0.9113 |
| 3 | -0.87942 | -0.72008 | -0.90191 | -1.0966 | -0.85347 |
| 3.1 | -0.96188 | -0.71396 | -0.99759 | -1.1037 | -0.88454 |
| 3.2 | -1.0227 | -0.71431 | -1.0721 | -1.1155 | -1.0585 |
| 3.3 | -1.059 | -0.7212 | -1.1217 | -1.1095 | -1.2733 |
| 3.4 | -1.076 | -0.73402 | -1.1526 | -1.1182 | -1.4346 |
| 3.5 | -1.1019 | -0.754 | -1.1755 | -1.1223 | -1.542 |
| 3.6 | -1.1537 | -0.78153 | -1.2058 | -1.1244 | -1.6354 |
| 3.7 | -1.2286 | -0.80295 | -1.2692 | -1.1228 | -1.7171 |
| 3.8 | -1.3061 | -0.81138 | -1.353 | -1.1181 | -1.7336 |
| 3.9 | -1.3787 | -0.83937 | -1.4351 | -1.1157 | -1.7523 |
| 4 | -1.4451 | -0.90973 | -1.5192 | -1.1348 | -1.7649 |

表 3.6: 几种常见轻粒子间聚变反应的热平衡反应率系数 $\langle\sigma v\rangle$

| $\lg(T[\text{keV}])$ | $\lg(\langle\sigma v\rangle[\text{m}^3/\text{s}])$ | | | | |
|----------------------|--|---------|------------------|---------|----------------------|
| | D+T | D+D (总) | D+ ^3He | T+T | T+ ^3He (总) |
| 0 | -26.165 | -27.703 | -31.47 | -28.735 | -33.272 |
| 0.1 | -25.578 | -27.163 | -30.516 | -28.111 | -32.243 |
| 0.2 | -25.035 | -26.667 | -29.635 | -27.539 | -31.295 |
| 0.3 | -24.534 | -26.212 | -28.824 | -27.015 | -30.422 |
| 0.4 | -24.069 | -25.794 | -28.076 | -26.535 | -29.619 |
| 0.5 | -23.637 | -25.412 | -27.386 | -26.096 | -28.88 |
| 0.6 | -23.236 | -25.061 | -26.75 | -25.695 | -28.201 |
| 0.7 | -22.864 | -24.739 | -26.164 | -25.329 | -27.577 |
| 0.8 | -22.524 | -24.445 | -25.621 | -24.994 | -27.005 |
| 0.9 | -22.216 | -24.175 | -25.119 | -24.689 | -26.482 |
| 1 | -21.945 | -23.927 | -24.653 | -24.412 | -26.002 |
| 1.1 | -21.713 | -23.7 | -24.219 | -24.16 | -25.565 |
| 1.2 | -21.519 | -23.491 | -23.813 | -23.933 | -25.165 |
| 1.3 | -21.364 | -23.298 | -23.434 | -23.727 | -24.802 |
| 1.4 | -21.244 | -23.121 | -23.082 | -23.541 | -24.471 |
| 1.5 | -21.156 | -22.957 | -22.763 | -23.372 | -24.171 |
| 1.6 | -21.097 | -22.805 | -22.481 | -23.219 | -23.899 |
| 1.7 | -21.063 | -22.664 | -22.239 | -23.079 | -23.652 |
| 1.8 | -21.05 | -22.534 | -22.04 | -22.95 | -23.428 |
| 1.9 | -21.055 | -22.412 | -21.882 | -22.829 | -23.226 |
| 2 | -21.074 | -22.3 | -21.762 | -22.714 | -23.044 |
| 2.1 | -21.107 | -22.197 | -21.677 | -22.601 | -22.879 |
| 2.2 | -21.149 | -22.101 | -21.621 | -22.491 | -22.733 |
| 2.3 | -21.2 | -22.012 | -21.59 | -22.384 | -22.603 |
| 2.4 | -21.256 | -21.929 | -21.58 | -22.284 | -22.488 |
| 2.5 | -21.316 | -21.853 | -21.585 | -22.197 | -22.387 |
| 2.6 | -21.379 | -21.782 | -21.602 | -22.127 | -22.298 |
| 2.7 | -21.44 | -21.717 | -21.627 | -22.076 | -22.22 |
| 2.8 | -21.499 | -21.658 | -21.656 | -22.044 | -22.15 |
| 2.9 | -21.553 | -21.603 | -21.687 | -22.03 | -22.087 |
| 3 | -21.6 | -21.553 | -21.715 | -22.032 | -22.029 |
| 3.1 | -21.641 | -21.509 | -21.741 | -22.045 | -21.974 |
| 3.2 | -21.675 | -21.471 | -21.764 | -22.068 | -21.926 |
| 3.3 | -21.707 | -21.442 | -21.788 | -22.098 | -21.885 |
| 3.4 | -21.741 | -21.426 | -21.815 | -22.135 | -21.859 |
| 3.5 | -21.781 | -21.426 | -21.85 | -22.18 | -21.85 |